Volume 8, 1
April 1995
A Subject and Author Index
of Dissertations and Theses
Including Abstracts.

Health
Physical Education
and Recreation

Exercise and Sport Sciences

Microform Publications
Bulletin

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## Key

- **PE** = Physical Education
- **PH** = Physiology and Exercise Epidemiology
- **RC** = Recreation and Leisure
- **HE** = Health Education
- **PSY** = Psychology
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Wisconsin, University of, at La Crosse
York University
# Contents

Part I: Titles and Abstracts ....................................................................................................................... 1–44

- Physical Education ......................................................................................................................... 1
- Administration ................................................................................................................................. 1
- Measurement and Evaluation ......................................................................................................... 2
- Pedagogy ......................................................................................................................................... 2
- Dance ................................................................................................................................................ 4
- History and Philosophy ................................................................................................................... 5
- Sociology and Cultural Anthropology ............................................................................................ 6
- Biomechanics ................................................................................................................................. 6
- Sports Medicine ............................................................................................................................. 8
- Physiology and Exercise Epidemiology .......................................................................................... 14
- Health Education .......................................................................................................................... 28
- Recreation and Leisure .................................................................................................................. 31
- Psychology ....................................................................................................................................... 33
  - Anxiety .......................................................................................................................................... 33
  - Attitudes and Values ...................................................................................................................... 34
  - Attribution ................................................................................................................................. 34
  - Behavior Analysis ....................................................................................................................... 35
  - Motivation ............................................................................................................................... 38
  - Motor Learning and Control ..................................................................................................... 39
  - Self-Concept .............................................................................................................................. 40
  - Social Psychology ..................................................................................................................... 42
  - Stress ........................................................................................................................................... 44

Part II: Keywords ...................................................................................................................................... 45-52

Index: .................................................................................................................................................. 54

Additional Items Available from Microfiche Publications ................................................................... 55

Order Form ........................................................................................................................................... 57
**PART I: TITLES AND ABSTRACTS**

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**PHYSICAL EDUCATION ADMINISTRATION**


The purpose of this study was to determine the attitudes and philosophies concerning corporate signage programs as well as provide information on the average revenue generated from signage programs. The population was made up of NCAA member institutions that were classified as Division I-A. A response rate of 59.4% from the 106 institutions included in this study, yielded the following conclusions: (1) An average revenue of about $253,796 can possibly be generated if corporate signage is utilized to its full financial potential; (2) Types and location of signage can increase revenue for an athletic department. Basketball signage brings in an average of $77,193 while football signage income averages around $78,190; (3) Attitudes concerning corporate signage do differ among different constituents within the university community. More athletic related areas tend to support signage while more academic related areas are seen as neutral or opposed in their opinion toward signage; and (4) A positive attitude toward signage does correspond to a slight increase in revenue from corporate signage. 73.7% of the schools surveyed generate between less than 1% to 2% by employing long-term corporate signage.


The purpose of the study was to determine (a) the preferred qualifications of the sport administration program director, as perceived by sport administration program directors and selected sport management practitioners; and b) to identify the actual qualifications of individuals who have assumed the role and responsibilities of sport administration program director at the graduate and/or undergraduate levels. The dependent variables in this study were: (a) educational preparation, (b) athletic administration experience, (c) teaching experience, (d) sport industry experience, and e) professional academic involvement. The independent variables were: (a) sport administration program directors, and (b) sport management practitioners. The subjects included the population of sport administration program directors (199) as identified by the North American Society for Sport Management/National Association for Sport and Physical Education Task Force, and a random sample of 300 selected sport management practitioners (75 each from four selected sport industry fields). A survey instrument was developed as a result of the review of the literature. Independent t-tests were conducted to identify mean differences between sport administration program directors and sport management practitioners on single item questions. The results of the study indicated that the two groups of subjects were similar in age and years in present position, but differ on level of educational degrees earned. Nine qualifications were perceived by both groups as essential. These included teaching experience, program evaluation, budget management, personnel management, curriculum design, regularly attend national sport management meetings, facility and event management, and computer application. Sport management practitioners did not perceive an earned doctorate as important for the sport administration program director to hold. Sport administration programs directors viewed as earned doctorate as most important. However, both groups rated educational background as an important qualification. Sport administration program directors and sport management practitioners wee statistically significantly different at the .05 alpha level on 22 of 39 specific qualifications. Sport administration program directors placed a higher value than the sport management practitioners on 18 of the 22 items.

The purpose of this study was to compare the perceptions of coaches and athletic administrators on fifteen factors related to hosting post-season, non-revenue athletic events: condition of facilities, “home field advantage,” class time missed, travel (lack of), operational planning time, costs of event, revenue from event, athletic staff development, athletic staff morale, fan support, community relations, university exposure, sport exposure athletic department exposure, and recruiting value. In addition, sub-divisions were made between the following groups of coaches: coaches of team sports, coaches of individual sports, coaches that had hosted a post-season event in the past five years, and coaches that had not hosted a championship event in the past five years. Ninety coaches and athletic administrators from the member institutions in the Atlantic Coast Conference responded to the questionnaire. The questionnaire asked the subjects to rate how each of the factors listed above would effect their decision to host a post-season, non-revenue athletic event on a Likert Scale from one to five. The means and factor rank order from each group were analyzed for each comparison. Sport exposure was the top ranked factor in every analysis. There was some variation for the remaining fourteen factors from comparison to comparison. Results did not show a significant differences in coaches’ and athletic administrations’ overall perceptions. The investigator determined that it is to an institution’s advantage to host post-season, non-revenue athletic events.

**MEASUREMENT AND EVALUATION**


The purpose of this study was to determine if a valid and objective rating scale could be developed which evaluated two volleyball skills: the overhead pass and the forearm pass. The rating scale was to be practical and easy to administer to students in a typical educational setting. Subjects were in a ninth-grade, coeducational physical education class at a rural high school in northern Illinois. They were videotaped as they performed three trials at each volleyball skill. The recorded performances were given to three raters and the researcher. The raters were required to score the second trial of each subject’s performance. Reliability was estimated with the intraclass correlation coefficient using Repeated Measures ANOVA. Results showed that for total scores, three out of four raters scored above .80 in the forearm pass, and two out of four raters scored above .80 in the overhead pass. The objectivity of the instrument was determined by calculating intrarater coefficients using a 3x3 contingency table. Results demonstrated significant reliability coefficients at various focal points. The study revealed that these rating scales are a valid and reliable resource for evaluating motor performance as long as evaluators are properly trained at applying evaluation standards.

**PEDAGOGY**

Hickey, Kathleen P. A COMPARISON OF DIVISION I FOOTBALL PLAYERS’ GRADES IN SEASON AND OUT OF SEASON, 1994. M.A., University of North Carolina at Chapel Hill (Frederick O. Mueller). (60pp 1 f $4.00) PE 3510

The purpose of this study was to determine the effect of sport season on the academic progress of student-athletes. The researcher investigated the in season and out of season grade point averages (GPA’s) of each of the sophomore and junior years of 66 Division IA college football players in three different graduating classes. Their GPA’s were examined to determine whether football players performed better, academically, in season or out of season. The results revealed that football players performed significantly better out of season. The researcher also divided football players into admission categories (competitive, noncompetitive, and exceptions) and playing categories (starters/major contributors, and contributors/noncontributors). The most significant findings relating to admission category were first, that football players in the competitive admissions category performed the best overall, while the exceptions performed poorest overall. Secondly, admissions exceptions were the only admission group that consistently performed better academically out of season than in season. Examining the data by playing category, the researcher found that football players who were starters/major contributors performed better academically out of football season, while contributors showed no statistical difference in GPA between semesters.

Honey, Michael J. THE IMPACT OF INTERSCHOLASTIC ATHLETICS ON ACADEMIC PERFORMANCE, 1994. M.S., Springfield College (Diane L. Potter). (93pp 1 f $4.00) PE 3512

Subjects for this study were 160 students from two different high schools that are located in high socioeconomic areas. The grade point averages for these students were recorded during two distinct periods; while the students were involved in an interscholastic sport and while the students were not participating in an interscholastic sport. The mean grade point averages were recorded for students while they were in-season and out-of-season as well as for males, females, varsity and junior varsity athletes. A 2 x 2 x 2 factorial analysis of variance with one repeated measure and two independent groups factor were used to analyze the difference in academic performance between the seasons, level of athletics and gender of...
participants. The out-of-season mean grade point average was significantly (p<.05) higher than the in season mean grade point average. The mean grade point average for the female athletes was significantly (p<.05) higher than the mean grade point average for the male athletes. The mean grade point average for the varsity athletes was significantly (p<.05) higher than the mean grade point average for the junior varsity athletes.


The Problem: The study was concerned with the influence of educational and demographic variables on students’ performance on the written portion of the NATA certification examination in athletic training dealing with knowledge of human anatomy. The problem included the development of an equation which could be used to accurately predict success on the anatomy-related portions of the written examination. Procedures: National Athletic Trainers’ Association certification examination candidates who were registered to take the examination for the first time on November 21, 1993 were sent a questionnaire designed by the researcher and asked to participate in the study. To assure the validity of the questionnaire, the survey instrument was submitted to a jury of experts for review. Findings: 1. Candidates who had an “anatomy-only” primary course, and those who did not use computer images in the laboratory performed significantly better on the anatomy subset than those students completing a combination course and those who were exposed to computer images. 2. Candidates who rated their undergraduate human anatomy preparation as “exceptional” scored significantly higher on the anatomy subset than those who rated their preparation “adequate”. 3. Candidates earning an “A” in the primary course scored significantly higher on the anatomy subset than those earning an “C”. 4. There is a statistically significant correlation between the undergraduate cumulative grade point average (CGPA), the time since graduation, and type of primary course and performance on the anatomy subset. The use of the CGPA in a regression equation can be used to predict performance on the anatomy subset. Conclusions: 1. The use of computer images in the anatomy laboratory is not prevalent in athletic training curricula. 2. An anatomy-only primary course is superior to a combination primary course (e.g. anatomy and physiology) in reference to performance on the anatomy subset. 3. Students who are exceptionally prepared in human anatomy perform better on the anatomy subset than those who are adequately prepared. 4. The CGPA can be used in an equation to predict performance on the anatomy subset.

Kilbourne, John R. BUILDING A BRIDGE BETWEEN ATHLETICS AND ACADEMICS, 1994. Ph.D., Ohio State University (Seymour Kleinman). (165pp 2 f $8.00) PE 3517

College sports have been plagued with abuses since their beginnings in the mid-nineteenth century. Despite the many attempts to reform college sport the problems continue and seem to have worsened. “Building A Bridge Between Athletics and Academics” examines the agendas suggested to reform intercollegiate athletics and proposes educational strategies which merge intercollegiate sport into the framework and mission of higher education. Initially the dissertation reviews the history of intercollegiate sport and the reform agendas that have been part of that history. The historical review brings to light the absence of any major agenda that suggested teaching those in sport about sport through courses or specific programs of study. The dissertation surveys and documents the actual availability of courses and academic opportunities in sport studies and performance at NCAA Division I-A colleges and universities. The data from the survey substantiates the fact that colleges and universities have failed to teach those in sport about sport. Following this, a review of the relationships that exist between dance and sport is put forth. Demonstrating the proximity of dance to sport provides support for the consideration of sport performance as a legitimate program of study in higher education. Using dance performance in higher education as a model, a program of study for college athletes is suggested that incorporates their interests into a legitimate and bona fide program of study. Supplementing the presentation of the sport studies and performance program are evaluations of the suggested model by leaders of the sport establishment.

Pellett, Tracy L. THE EFFECT OF REFINEMENT AND TEACHER FEEDBACK ON FEMALE JUNIOR HIGH SCHOOL STUDENTS’ VOLLEYBALL PRACTICE SUCCESS AND ACHIEVEMENT, 1993. PED, Brigham Young University (Joyce M. Harrison). (141pp 2 f $8.00) PE 3529

This study determined the influence of refinement tasks and teacher specific congruent corrective feedback on students’ daily practice success and overall achievement. The study examined female seventh and eighth grade junior high school students (n=200) in six intact classes learning volleyball skills (underhand serve, set, and forearm pass) over an 11-day unit. Classes were randomly assigned to three groups: (a) control, (b) group receiving refinement tasks during skills progressions (E/R/A group) (c) group receiving no refinement tasks during skills progressions (E/A group). Data analysis revealed that refinement tasks did have a positive effect on students’ daily practice success (daily C/T ratio). However, the overall effects of refinement on posttest improvement were negligible. Practice success after teacher feedback was
characterized by an overall improvement in performance by lower- and higher-skilled ability groups for all skills and tasks.

Robertson, Stuart A. AN EVALUATION OF THE CHARACTERISTICS OF SUCCESSFUL STUDENTS AT THE BRINKMAN-FROEMMING UMPIRE SCHOOL, 1993. M.A., University of North Carolina at Chapel Hill (Ronald W. Hyatt). (78pp 1 f $4.00) PE 3535

The purpose of the study was to identify the characteristics that were similar among the Successful students at the Brinkman Froemming Umpire School located in Cocoa, Florida. To be successful, students had to advance to the Umpire Development Evaluation Course immediately following umpire school. The researcher conducted the study by directly administering the Brinkman-Froemming Umpire School Questionnaire constructed by the investigator specifically for this study. The study concluded that several items were significant among the Successful Students who advanced to the Umpire Development Course. Among these significant items was age, weight, educational levels, frequency of experience umpiring on various levels, career aspirations, hours per week of training necessary to obtain ideal skill levels, and personal ability assessment. An analysis of the questionnaire indicated that Successful Students showed differences in age, weight, educational levels and career aspirations along with other items (See page 58 for the profile of the successful student).

DANCE


Stories express important universal themes which reside in mankind’s collective unconscious. Dance, by virtue of its ability to communicate directly through gesture, can be an effective medium for expressing these universal themes. The purpose of this project was to choreograph two dance works (developed from a parable and a fairy tale), each portraying a different universal theme, and to determine the audience’s response in identifying these universal themes through the use of an evaluation form. The data collected from the evaluation form indicated the audience members were able to identify the universal themes expressed in the two storydances. The semantic differential scale used in the evaluation survey proved to be extremely beneficial to the author in that it validated her ability to choreograph storydances, and indicated the evaluation survey form used for this project has a unique capability to measure attitudes about storydance. These storydances are on video tape and are located in the Dance Department office.

Miller, Rebecca D. INNER PASSAGES: A CHOREOGRAPHIC EXPLORATION OF THE EFFECTS OF ENTRAINMENT ON CHOREOGRAPHY, 1993. M.S., University of Oregon (Sherrie Barr). (90pp 1 f $4.00) PE 3524

This choreographic project was based on the phenomenon of entrainment, where rhythmic pulses connect, synchronize, and create distinctive wave patterns which make up an individual’s identity. This research examined the effectiveness of entrainment properties as a means to generate and manipulate movement. Distinct properties of entrainment were identified and explored on a physical level. Preparation for the choreographic process involved exploring the crystalline state to sense emotional feelings and physical sensations. Ideas were formulated about how specific movement discoveries could be applied to choreography. A personal choreographic process based on entrainment has developed. Aspects of entrainment were further developed and manipulated in the choreography for three works. Entrainment was effective as a movement generating tool. Properties of entrainment were utilized to create full range of qualities and to develop and analyze the choreography for the this thesis. It can allow choreographers to explore and express their own unique artistic identities.


The purpose of this thesis was to document cultural and historical information about women in the performing arts in Herat, Afghanistan during a vital decade in their history, 1970-1980. Study involved religious and social implications regarding music, dance, women and performing. The project included information surrounding dances of Afghanistan with special attention to selected women’s dances from Herat. Choreography was created for the Brigham Young University International Folk Dance Ensemble to provide visual record of the chosen dances and add to the repertoire of the company. The choreography created for Brigham Young University International Folk Dance Ensemble is recorded in both written and video forms. Photos and other illustrations were added to support the written material. Video recordings of native Herati performers were also made.

Wartluft, Elizabeth M. THE FUNCTIONS OF DANCE IN SOCIAL GATHERINGS IN SEATTLE’S ARAB-AMERICAN COMMUNITY, 1994. M.A., University of Oregon (Lisa C. Arkin). (144pp 2 f $8.00) PE 3543
My research describes the occurrence of traditional Arabic dance and dance events in Arab-American’s lives in the Seattle Arab community, discusses dance’s social and cultural functions, and documents changes in Arab-American society as mirrored in function and occurrence of dance. Bibliographic research, participant observation and interviews (N=21) provide the data for this study. Dance occurs at many social gatherings within the Arab-American community, especially at weddings. Dance also happens at milestone celebrations, such as births, graduations, and engagements; and on holidays. Dance is also done at informal gatherings and private parties. The most frequently voiced reasons for dancing were: to express happiness (76%); to celebrate being together (48%); to express cultural or ethnic identity (48%); to express emotion (43%); for fun (29%); for physical or emotional release (19%); and to celebrate connection with life and the earth (19%).


This study, rooted in the Chinese concept of “the unity of the human being and Heaven,” as the consummate achievement of philosophy and art, presents Tai Ji philosophy as an artistic and philosophical foundation for the potential development of Chinese contemporary dance in two directions. The first direction aims at revealing Tai Ji philosophy and its artistic values as references for the performance and creativity of Chinese contemporary theatre dance. Chapter 2 discusses Tai Ji philosophy and its artistic values based on Neo-Confucian and Taoist philosophies and also mentions some parallel ideas in Western contemporary studies of physics and psychology. Two Tai Ji metaphysical ideas—Li (Principle) and Chi (Vital Force), and three Tai Ji’s philosophical notions—“one and many,” “micro-in macro,” and “Wuwei”—provide the framework for this study. Chapter 3 expounds the influences and applications of Tai Ji philosophy, especially the idea of Chi and the notion of Wuwei, in the examples of Chinese art—Song landscape painting, and Chinese martial arts—Tai Ji Quan. The second direction aims at applying Tai Ji philosophy as traditional insight for contemporary development of Chinese dance. Chapter 4 discusses contemporary relevance of Tai Ji philosophy with dance through the examinations of American and Japanese postmodern dances: the works of Trisha Brown and David Gordon, contact improvisation, and the body theories of Tatsumi Hijikata and Kazuo Ohno. Chapter 5, referring to an Eastern body-mind theory and anthropological study of dance, advocates a new attitude and perspective for viewing dance as the cultivation of both a specific skill and life within current Taiwanese dance milieu.

HISTORY AND PHILOSOPHY

Schimmel, Kimberly S. FROM NAPTOWN TO SPORTSTOWN: GROWTH POLITICS, URBAN DEVELOPMENT, AND ECONOMIC CHANGE IN INDIANAPOLIS, 1994. Ph.D., University of North Carolina at Greensboro (Janet C. Harris). (218pp 3 f $12.00) PE 3538

The purpose of this study was to explore the construction and implementation of Indianapolis’ urban growth strategy and to assess its impact on the local employment and wage structure. An analytical case study encompassing the years from 1960 to 1990, was developed to provide an integrated view of the historical, social, and political forces that defined the conditions in which this strategy was embedded. Information gathered to develop this case study included planning documents, minutes from public hearings, consultants’ analyses and reports, newspaper accounts, and numerous miscellaneous texts. In addition, the author conducted formal interviews with key Indianapolis government, business and community leaders. Covered employment and wages data were utilized to assess the ways in which Indianapolis’ economic and wage structure evidenced change from 1980 to 1990. Location quotients were calculated to compare Indianapolis’ economic structural change to that of the nation. Wage data were analyzed to ascertain the annualized average wages associated with the jobs created or lost in the Indianapolis economy between 1980 and 1990. Indianapolis growth politics emerged in the mid 1970’s when the city was in the grips of an urban crisis. The city’s bellwether industries-in heavy manufacturing- especially those related to the auto industry, made the city vulnerable to capital disinvestment spurred by national economic downturns and foreign competition. Realizing the city’s vulnerability, and fueled by a desire to (a) shed their Naptown image, and (b) be in greater control of their economic destiny, a coalition of corporate elites and skilled Republican mayors structured an agenda designed to harness the service industries for economic growth. The coalition’s strategy involved using sport as a vehicle to build and amenity infrastructure, enhance the quality of life for middle-class residents, and turn Indianapolis into a Mecca for tourists and conventioneers. The coalition’s strategy was aided by the bureaucratic resources of the local state and the considerable financial resources of the locally based Lilly Endowment, Inc. The tradition of secrecy connected with negotiations among political and financial leaders helped to insulate planning activities from popular pressure. From 1974 to 1984 a total of $.4 billion was invested in inner city construction, and between 1980 and 1984 over $126 million
in public and private resources was invested in downtown state-of-the-art sports facilities. Between 1970 and 1990, coalition leaders were successful in altering the city’s geographic boundaries, political complexion, national image, and economic structure. The growth strategy’s most noticeable employment gain occurred in lower-paying service sector jobs. This fact, when coupled with the sociospacial impact of the “back to the city”, suggests that while the coalition’s strategy enhanced the collective consumption privileges of the white middle-class, it did little to relieve the social and economic burdens of lower-class and ethnic minority residents.

**SOCIOPY AND CULTURAL ANTHROPOLOGY**


The purpose of this study was to compare the patterned, free lance, and continuity basketball offenses. It was hypothesized that the continuity offense would be the most effective offense, in terms of offensive efficiency. Thirty six volunteers, members of Greek basketball teams composed of 14-16 year old players were the subjects of this study. Subjects were divided into three groups. Each group formed a basketball team and practiced four weeks on the execution of one of the offenses. Then, the three teams participated in a basketball tournament, consisting of six teams. One-way independent measures ANOVA was used to determine that the patterned offense was the most effective, in terms of offensive efficiency. Thirty six effective offense, in terms of offensive efficiency. Thirty six

**BIOMECHANICS**


The purpose of this study was to investigate intratester and intertester reliability when using the Chatillon hand-held dynamometer (HHD) to measure isometric force production of the wrist extensors, elbow flexors, ankle dorsiflexors, and knee extensors. Prior to participation in this study all examiners and subjects read and signed an informed consent form in accordance with the Temple University Institutional Review Board. Examiners were 4 females and 8 males between the ages of 21 and 42 years. All examiners are National Athletic Trainers’ Association (NATA) certified athletic trainers. Examiners were instructed in the proper use of the Chatillon HHD as directed by a Chatillon Service Representative. Examiner proficiency was established prior to the data collection. Subjects were 3 females and 9 males between the ages of 21 and 39 years who denied history of injury to the tested upper extremity or lower extremity in the past twelve months. Subjects were positioned, stabilized, and tested with the Chatillon HHD interposed between the examiner’s hand and the test limb. Testing was performed at the midpoint in the joint range of motion. Goniometrically obtained joint test positions were: 35 degrees of wrist extension, 75 degrees of elbow flexion, 10 degrees of ankle dorsiflexion, and 67.5 degrees of knee extension. Manual Muscle Testing (MMT) consisted of isometric contraction break tests. Four tests, two test-retest sequences, were performed at each joint test site by the examiners. The averages of the first test-retest and the second test-retest sequence, were used to determine intratester reliabilities. Those scores were averaged and used to determine intertester reliabilities. Intratester ICC were generally high, ranging from r=0.41 to r=0.98, for the upper and lower extremities. Only 5 scores fell below the criterion r=0.60. Intertester ICC were low, ranging from r=-0.03 to r=0.87 for the wrist extensors, r=-0.28 to r=.96 for the elbow flexors, r=0.17 to r=.90 for the ankle dorsiflexors, and r=-0.36 to r=.88 for the knee extensors. The results of this study indicated that the Chatillon HHD was reliable when used by a single examiner who had been properly trained in its use.

LaBranche, Matthew J. EFFECT OF BATTING STANCE ON GROUND REACTION FORCES, BAT VELOCITY, AND RESPONSE TIME, 1994. M.S., Springfield College (H. Joseph Scheuchenzuber). (91pp 1 f $4.00) PE 3519

Baseball batting stance differences in bat velocity, ground reaction force, and response time were studied for 17 members of the Springfield College baseball program. All dependent variables were hypothesized to be greatest when utilizing the closed stance. Subjects hit from a stationary batting tee. Each subject was tested using a closed, square, and open batting stance. Bat velocities at the point of ball-bat contact were measured by a uniaxial video analysis system. Peak anteroposterior forces for the rear foot were measured by a force platform. Response times were measured by a time lapse clock. A one-way repeated measures analysis of variance (ANOVA) was computed for each of the dependent variables. No significant (p>.05) mean differences were found for bat velocity. No significant (p>.05) mean differences were found between square and closed stance for ground reaction force and response time; however, for reaction forces the square
and closed stances were significantly (p<.05) greater than the open stance, while response time for these stances were significantly (p<.05) less. Baseball players tend to produce slower and less forceful swings when they assume an open stance.

Meiners, Earlet P. THE EFFECT OF TOE AND PLANTAR FLEXOR STRENGTH TRAINING ON VERTICAL JUMP PERFORMANCE OF FOLK DANCERS, 1991. M.S., Brigham Young University (Earlene Durrant). (70pp 1 f $4.00) PE 3523

This study examined the effect of toe and plantar flexor strengthening on vertical jump performance. Thirty nine students on the International Folk Dance Performing Arts Company at Brigham Young University were randomly assigned to one of the following groups: Group 1: plantar flexor and toe flexors; Group 2: toe flexor; Group 3: plantar flexor; Group 4: control group. Groups 1 - 3 participated in progressive resistance workouts 3 times a week for 8 weeks. An analysis of variance indicated that there was no significant statistical differences in vertical jump gains between the groups.


The purpose of this study was to determine the meniscal kinematic motion of the non-injured knee. Five males (mean age=24.87±3.55 years) and four females (mean age=25±0.76 years), who denied previous history of knee injury, were examined by magnetic resonance imaging (MRI). Each subject had MRI scans taken with their knee held by a posterior splint at 0, 30, 60, and 90 degrees. A 1.5 Tesla magnet (Signa, software 4.7, General Electric Medical Systems, Milwaukee, WI) was used to obtain the MRI scans. To improve image resolution, dual 3-inch surface coils wee applied to the medial and lateral sides of each knee. A 256 x 256 matrix with a 1.0 x 1.125 mm pixel size and a 16 cm field of view were used. A spin echo pulse sequence was used with a repetition time of 300 msec and echo time of 16.0 msec. Paired t-tests were used to analyze the data. Mean medial meniscal composite excursion was 6.66±1.51 mm, and mean lateral composite meniscal excursion as 3.39±1.14 mm. The ration of lateral to medial excursion was 1:1.97 and was statistically significant (p<.001). Mean posterior horn composite excursion for the medial meniscus was significantly less (p<.001) than the mean anterior horn excursion for the medial meniscus, but not significantly different for the lateral meniscus (p<.40). The ration of mean posterior of anterior horn excursion of 1:2.2 medially and 1:1.2 laterally.

States, Rebecca A. RESOLVING INDETERMINACY ASSOCIATED WITH JOINT-LEVEL MOTOR EQUIVALENCE IN PLANAR AIMED ARM MOVEMENTS, 1994. Ph.D., Columbia University (Charles E. Wright). (87pp 1 f $4.00) PE 3541

Joint-level motor equivalence exists when more degrees of freedom are available at the joints than are required. In a pointing task, all arm configurations that suffice to position the end-effector at a desired target location constitute a “motor equivalence set.” Motor equivalence provides flexibility, but also complicates motor planning. Whenever a movement is performed, subjects must select a single arm configuration from the infinite number available within the motor equivalence set. Simulation models have suggested various solutions to this problem (Rosenbaum et al., 1993; Bullock and Grossberg, 1992; Cruse, 1986). My research provides a comprehensive and well controlled data base to help evaluate and improve previous models. Arm configurations are measured at the beginning and end of pointing movements made in a horizontal plane. Four degrees of rotational freedom are permitted: one each at the right wrist, elbow and shoulder, and at the torso. Five subjects make repeated movements from 30 starting points to a single target, with five targets tested on separate days. Results partially confirm Soechting and Flanders’ (1989) observation that a one-to-one mapping between end-effector position and arm configuration accounts for substantial variance in joint angles. This effect is interpreted with reference to geometric constraints imposed by the multi joint linkage system. In addition, much of the variability associated with repeated movements to a given target is accounted for by three methods. First, consistent patterns of coordination among pairs of joints are seen. For example, final shoulder and torso angles are strongly negatively correlated. Second, individual subjects adopt dramatically different strategies in use of the wrist. One subject consistently freezes the wrist, another moves the wrist to neutral, and the others vary their strategies across targets. Finally, variability in final shoulder angle is associated with starting shoulder and torso angles and initial position of the end-effector. These findings imply that models for resolving joint-level motor equivalence must flexibly incorporate and switch among a variety of strategies. The extent to which several previously suggested models meet these criteria are discussed.


The purpose of this study was to compare the effects of aquatic stimulated and dry land plyometrics on vertical jump height. Subjects for the study were untrained 18 to 35 year old male students at Temple University who were
divided into 3 groups. Group I consisted of 7 subjects who trained in the water, Group II consisted of 8 subjects who trained on land, and Group III consisted of 9 subjects who did not train at all and acted as the control group. Plyometric exercises selected for the study were the squat jump, side hop jump and knee-tuck jump. For each plyometric exercise subjects in Groups I and II performed 3 sets of 15 jumps with a 1 min rest between sets. Training took place twice a week for 6 weeks. Vertical jump height was measured using the VERTEC apparatus as the data collection instrument. Subjects were given three opportunities to reach maximum height. The highest of the three jumps was used as the comparison measure for the pre-and posttest scores. A 2X3 analysis of variance with repeated measures (p<.5) was performed to examine the differences among groups. The results indicated that there was a significant interaction. A Turkey post hoc test revealed the vertical height for the two training groups was significantly greater than that of the control group, but there was no difference between training groups. Based on these results, on can conclude that plyometric training in an aquatic environment produces vertical jump increases similar to those obtained from training on dry land.

Xi, Jianwei. PREDICTION OF ONE REPETITION MAXIMUM BENCH PRESS FROM PUSH-UPS IN ACTIVE YOUNG MALES, 1993. M.S., University of Wisconsin-La Crosse (Lawrence R. Terry). (60pp 1 f $4.00) PE 3544

The purpose of this study was to determine the accuracy of predicting one maximal bench press (1RM) lifting strength from the maximum number of push-ups (PU) in 1 minute for active young males. 42 college males between 18 - 32 years of age volunteered for the study. 1 maximal bench press was done with standard Olympic freeweights. Subjects did as many PU as possible in 1 minute 2 to 3 days after doing 1RM. Push-ups, as an independent variable, was adjusted for weight (Wt) (PU x Wt); height (Ht) (PU x Ht); lean body mass (LBM) (PU x LBM); height and weight (PU x Ht x Wt); average circumference of arms (AC) and average weight of higher and lower position from palms when doing PU (WtA) (PU x AC x WtA); AC and LBM (PU x AC x LBM); AC and LBM and height from ground to shoulder joint when standing (HtGS) (PU x AC x LBM x HtGS), and AC and Wt (PU x AC x Wt). The data were processed with multiple regression analyses. Push-ups in 1 minute were not significantly related to 1RM (p>.05). The best prediction equation from independent variables was given by 1RM - 3.1043 x AC+.0003 x PU x AC x WtA - 28.1134. It accounted for 69.8 % variance of prediction with the p-value of p<.01 for the goodness of fit of the model. However, the large standard error of estimate of ±11.99 Kg could not make push-ups an accurate indictor for 1RM in active young males.

SPORTS MEDICINE

Brannan, Tori L. A COMPARISON OF ANTERIOR TIBIAL-FEMORAL LAXITY IN FEMALE INTERCOLLEGIATE GYMNASTS TO A NORMAL POPULATION, 1994. M.S., Brigham Young University (Shane S. Schulthies). (69pp 1 f $4.00) PE 3504

Increased joint laxity may predispose an individual to ligamentous injury. Gymnasts have a high incidence of ligamentous injury, including the anterior cruciate ligament (ACL). Previous authors have found a relationship between ACL disruptions and pre-existing ligament laxity. We compared the anterior tibial-femoral laxity in the knees of intercollegiate gymnasts to that of a normal population (non-intercollegiate, non-gymnasts). We tested 30 gymnasts and 30 controls, having no history of ACL injury, with the KT1000 knee arthrometer (MEDmetric Corporation, San Diego, CA). The quadriceps active, 133 N (30 lbs) anterior drawer, and manual maximum tests were performed on the subjects’ right knee along with goniometer measurements. Using a two way analysis of variance (ANOVA) with repeating measures, we detected a significant increase in anterior laxity when comparing the 133 N to the manual maximum test, but no significant difference between gymnasts and non-gymnasts. We conclude that gymnasts, as a group, are not abnormally lax when compared to an active population of similar age. Future comparison of the longitudinal data of those who incur ACL injury during their gymnastics career may elucidate whether individual gymnasts with increased laxity have increased risk of ligamentous injury.


The purpose of this study was to determine the time course of the repeated bout effect of eccentric exercise on delayed onset muscle soreness when a soreness producing exercise bout was repeated after 6, 7, 8, or 9 weeks. The 31 subjects were randomly assigned to 1 of 4 exercise groups. Subjects performed 2 identical eccentric exercise bouts separated by 6, 7, 8, or 9 weeks depending on group assignment. Perceived and punctate soreness were quantified using a visual perceived pain scale and a pain threshold gauge. Data were collected before eccentric exercise and at 0, 24, 48, and 72 hours after both eccentric exercise bouts. Two 4 x 2 way analyses of variance (ANOVA) with repeated measures were used to analyze the perceived and punctate soreness data among exercise groups, tests, and bouts. Significant (p<.05) main effects were found for bouts, and tests and Tukey post-hoc tests were performed to determine where differences occurred. Significantly less perceived soreness was found in the 9-week group than in
The importance of closed-kinetic chain exercises in rehabilitation in recent years has grown considerably. This study assessed the reliability of the Biodex closed kinetic chain attachment during maximal strength testing for the upper extremity. Thirty subjects were selected from the normal student population at University of North Carolina-Chapel Hill. The subjects performed three maximal concentric contractions at 120 degrees per second and 400 degrees per second on two separate days. Peak torques for flexion and extension were recorded. A two-way ANOVA and Intraclass Correlation Coefficient (ICC) were calculated along with the mean absolute difference between trials. ICC values reflected moderate degrees of reliability for dominant and non-dominant upper extremity flexion (ICC=0.7) and extension (ICC=0.7) and gross flexion (ICC=0.8) and extension (ICC=0.8) efforts. Mean absolute differences showed a small degree of variability. Subjective responses about seating comfort and chair set-up were noted. This study did not find the Biodex closed kinetic chain attachment, in its present design, to be reliable for this population. Further studies with a larger population accompanied with appropriate design changes are needed.


The purpose of this study was to compare the volumetric changes in the post acute ankle sprains after treatment using a M.E.N.S. alone group; a Jobst Cryo/Temp with M.E.N.S. group and a Jobst Cryo/Temp with inactive M.E.N.S. electrodes group as they control. Pre, post, and 24 hour post treatment water displacement measurements were taken to indirectly calculate volumetric. This study consisted of three groups of ten subjects, each with random assignment. Each subject was evaluated by a certified athletic trainer or a UNC physician. Each subject presented with a unilateral ankle strain with pitted edema that did not require cast immobilization or surgery. A 3x3 repeated measures analysis of variance was performed and showed a significant repeated measures effect (p=.0279). A Turkey’s HSD post hoc test was performed yielding a p value of .0373 for pre to 24 hour post treatment measurements. These findings suggest that all 3 treatments significantly reduced, but none was more effective than another.


The need for some objective measure of functional ability has grown considerably in recent years. The purpose of this study was to obtain normative data on a non-varsity athletic population. Subjects consisted of one hundred non-varsity athletes who performed three trials of four functional tests: carioca, co-contraction semi-circular, one-legged hop, and shuttle run. The best time on each test was noted and summed, resulting in a CFPI (Carolina Functional Performance Index) value for each subject. Correlation matrices were calculated with significant correlations between the CFPI and the co-contraction semi-circular test and the carioca test respectively for both males (r=0.860, r=0.872) and females (r=0.931, r=0.872). Stepwise regression procedures were used to develop prediction equations for the CFPI using the two most highly correlated tests for each gender. No significant correlation existed between the CFPI or the functional tests and structural characteristics. Further studies should focus on obtaining normative data of other populations.

Irwin, Melinda L. DEVELOPMENT OF AN ANTHROPOMETRIC REGRESSION EQUATION TO PREDICT BODY DENSITY IN AFRICAN AMERICAN WOMEN, 1994. M.A., University of North Carolina at Chapel Hill (Barbara E. Ainsworth). (131pp 2 f $8.00) PE 3514
The purpose of this study was to develop a body density prediction equation using anthropometric measurements in 97 African American women, ages 18 - 40 years. Body density was measured from underwater weighing (BD\textsubscript{UW}) with correction for residual lung volume. Stepwise regression analysis was done of BD\textsubscript{UW} on all the independent variables. Measures contributing to the “best” model were the sum of the triceps, thigh, and abdominal skinfolds (sum of 3 SKF), sum of 3 SKF\textsuperscript{2}, log of umbilicus circumference - (0.00079192 x sum 3 SKF) + (0.00000228 x sum 3 SKF\textsuperscript{2}) - (0.04154205 x log umbilicus circumference) and age. The final model in g/cc was: 1.26603330 - (0.00079192 x sum 3 SKF) + (0.00000228 x sum 3 SKF\textsuperscript{2}) - (0.04154205 x log umbilicus circumference) - (0.00029738 x age) (r\textsuperscript{2}= .814, SEE=.009 g/cc). This r\textsuperscript{2} was higher than observed using the Jackson, Pollock, and Ward equation (r\textsuperscript{2}= .68, SEE=.111 g/cc). These findings suggest that race specific equations may explain more of the variance in body density in African American women as compared to using equations developed in Caucasian women.


Twenty-four male subjects were tested daily for 4 consecutive days to verify a new method of hydrostatic weighing—the Natant Disks. Natant Disk measurements during full inspiration (FI) and full expiration (FE) were compared to hydrostatic tank measurements at FE. The Natant Disks were found to be reliable (R=0.996) and valid (r\textsuperscript{2}=0.975 for Disk-FE; r\textsuperscript{2}=0.938 for Disk-FI) during both conditions. However, FE measurements provided more consistent results, varying only 0.301% body fat during FE (0.444% body fat during FI) over the 4 days. Greater-than-expected discrepancies during FI can probably be attributed to the difficulty of repeated maximal inhalations and/or subject fatigue or boredom. From a practical standpoint, the Natant Disks are easy to use, relatively inexpensive, and provide reliable and valid data. However, the FE protocol should be used to decrease the chance of error associated with air in the lungs and/or the inability of subjects to consistently achieve maximal inhalations.


The purpose of this study was to assess the need for NATA certified athletic trainers in New York state high schools. Questionnaires were mailed to all 1,054 public, private and parochial high schools in New York state. A total of 603 questionnaires were returned for a response of 57%. Five hundred forty-one (90%) respondents reported a need for certified athletic trainers at the high school level. Four hundred sixty-seven (77%) respondents reported that the NATA certified athletic trainer was the person most qualified to prevent and treat athletic injuries. In high schools where a certified athletic trainer was not employed, the individual coach was responsible for health care at 454 (75%) and 456 (75%) schools for boys and girls varsity practices, respectively. Two hundred forty-six (51%) of the non-NATA personnel had a basic first aid course as their only training for treating athletic injuries. Eighty-four (14%) athletic trainers were employed in high schools by utilizing the contract services of local physical therapy/sports medicine centers. Only six (1%) high schools in New York state employed an NATA certified athletic trainer on a full-time basis and 132 (22%) high schools employed NATA certified athletic trainers on a part time basis. Four hundred thirty-eight (75%) of the respondents expressed concern relative to litigation involving athletic injuries. Two hundred seventy-six (46%) schools had been involved in litigation due to serious athletic injuries. Three hundred twenty-four (54%) of the respondents noted their school districts would not be hiring certified athletic trainers in the near future. Budgetary constraints were the most commonly cited reasons that NATA certified athletic trainers would not be hired. There are over 170,000 male and female high school students who participate in interscholastic sports in New York state. Based on the findings of this study, there are approximately 155 NATA certified athletic trainers employed in New York state high schools in some capacity. The ratio of 1 NATA certified athletic trainer for every 2,000 high school athletes is too low. High school athletes in New York state are not being provided adequate health care according to these figures.

Macpherson, Kevin. EFFECTS OF A SEMIRIGID AND A SOFTSHELL PROPHYLACTIC ANKLE STABILIZER ON PERFORMANCE, 1994. M.Ed., Temple University (Michael R. Sitler). (70pp 1 f $4.00) PE 3520

The purpose of this study was to determine the effect of a semirigid and softshell prophylactic ankle support device (PASD) on performance by football player position in event testing vertical jump, speed and agility. Twenty-five subjects, all members of the Pennsbury High School varsity and junior varsity football teams’ participated in the study. All subjects denied any history of ankle injury within one year of the study or previous experience with PASD use. Performance tests used in this study were: vertical jump, 40-yard sprint, and 20-yard shuttle run. Subjects completed all tests under three different ankle treatments: aircast SportStirrup, DonJoy RocketSoc, and nonbraced control. Subjects completed each performance test twice with the best score recorded as the criterion measure. Experimental order of testing and performance tests were randomized. Subjects rested 2 minutes between trials and 10 minutes between performance tests. All subjects were required to provide their own football shoes and to be consistent in footwear worn across tests sessions. The vertical jump was recorded to the nearest half inch. The 40-yard sprint was
measured to the nearest .01 second using a hand held stopwatch. All tests were performed on a grass football field and testing was not conducted during inclement weather. Data analyses consisted of three 2x3 analysis of variance (ANOVA) with repeated measures to determine the probability effect of 2 independent variables on 3 dependent variables. Ankle support condition (Aircast Sport-Stirrup, DonJoy RocketSoc, and nonbraced control) and player position (skill an strength) were the independent variables. Results of this study indicated that the Aircast Sport-Stirrup or DonJoy RocketSoc had no significant effect on vertical jump, 40-yard sprint, and 20-yard shuttle run performance. There was, however, a significant difference in 40-yard sprint performance between player position. Skill players had faster 40-yard sprint times than did strength players regardless of ankle treatment.

Mahler, Erik B. CROSS-EDUCATION FOLLOWING SINGLE-LIMB ECCENTRIC AND CONCENTRIC TRAINING ON THE BIODEX ISOKINETIC DYNAMOMETER, 1994. M.S., Washington State University (William Thorland). (72pp 1 f $4.00) PE 3521

The purpose of the study was to examine and compare strength increases in trained and untrained leg extensors following five weeks of single-limb eccentric or concentric training on the Biodex isokinetic dynamometer. Twenty-four healthy male college student (aged 19-26 years) were randomly assigned to one of three groups; (1) control group, (2) eccentric training group, and (3) concentric training group. The training groups took part in five weeks of isokinetic training consisting of three sessions per week. Each session included 2 sets of 10 maximal contractions at both 60°/s and at 120°/s. Pretraining and posttraining strength tests were performed on all the subjects. The strength tests included measuring peak torque for leg extension three ways: (1) isometrically at 60° of knee flexion, (2) eccentrically at 60°/s and 120°/s, and (3) concentrically at 60°/s and 120°/s. Adjusted (covaried for pretraining strength) posttraining torque measures were analyzed by ANCOVA to determine any significant differences in strength between the groups. The results showed that compared to the control group, eccentric training group had significantly higher posttraining torque means in both the trained and untrained legs for all three testing modes. Furthermore, compared to the concentrically trained group, the eccentrically trained group also had significantly higher posttraining torque in the trained leg during eccentric testing. The average strength increases for the eccentric group were 11-38.9% and 9.6-35.8% in the trained and untrained legs, respectively. In contrast, compared to the control group, concentric training resulted in significantly greater posttraining torque only under concentric and isometric testing conditions. The average strength increases in the concentric training group were 9.8-27.4% and 8.6-

14.6% in the trained and untrained legs, respectively. Within each type of exercise (eccentric or concentric) similar training effects occurred in both the trained and untrained legs, and 15.6% of the variance in strength in the untrained leg. From these results, it was observed that five weeks of single-limb isokinetic eccentric or concentric training were effective in increasing strength in both the trained and untrained quadriceps femoris muscles. However, based on the postraining torque means, it may also be concluded that single-limb eccentric training was more effective than single-limb concentric training in terms of increasing strength in both the trained and untrained legs.


The purpose of this study was to determine the demographics, professional preparation, future academic goals, current employment settings, work parameters, and level of job satisfaction of graduates from the eight National Athletic Trainers’ Association (NATA) approved undergraduate athletic training programs in the state of Pennsylvania. A questionnaire was developed and mailed to 860 graduates in 1990 to 1991, and a total of 377 (44%) responses were returned by 182 (49%) males and 195 (51%) females. On average, the respondents were 30.6 years old (males=31.8, females=29.7) and 8.0 years postundergraduate graduation (males=8.6, females=7.2). Approximately 88% of the high school, college/university, and clinical primary athletic trainers reported having been adequately prepared academically for their current employment setting. Approximately 80% of the high school, college/university, and clinical primary athletic trainers reported having been adequately prepared clinically. Sixty-nine (46%) of the respondents held master’s degrees and, of these, 40 (58%) anticipated pursuing a doctorate. Hierarchy of job satisfaction by employment setting was as follows: college trainers were least satisfied, citing dissatisfaction with salary, advancement opportunities, stress, and number of hours worked; high school trainers were generally satisfied, citing discontent with career advancement; and clinical trainers were most satisfied, citing moderate concern with salary and advancement opportunities. Seventy percent of the respondents employed as athletic trainers reported that they would again choose athletic training as their career. Of 94 (24%) respondents who were not currently employed in the profession, 48% had worked 3 years and 75% had worked 5 years as athletic trainers. The present work settings for these individuals were predominately in people-service professions. Retrospectively, 48% of these
respondents indicated that they would again choose athletic training for their career pathway. Primary reasons males left the profession were excessive time commitment, limited salary, and lack of advancement; females cited lack of personal and family time due to excessive on-job time demands. The importance of this study is that it identifies diversified issues confronting the athletic training profession as it emerges in to 21st century.


The purpose of this study was to investigate the effect the Achilles tendon adhesive taping technique, the Pro M-P Achilles Strap, and control, where nothing was applied to the Achilles tendon, conditions had on eccentric plantar flexion peak torque output at 30 and 120 degrees per second on the Biodex B-2000 Isokinetic Dynamometer. Subjects were 31 asymptomatic males (15) and females (16) between the ages of 18 to 32 years. Subjects participated in at 2 practice and 3 data collection sessions separated by no less than 7 days and no more than 14 days. Condition and angular velocity were randomly ordered. The practice and data collection sessions consisted of a warm-up and test at both velocities. The warm-up consisted of 4 submaximal eccentric contractions and 1 maximal eccentric contraction through 40 degrees of plantar flexion and 10 degrees of dorsiflexion of the talocrural joint. A 1-minute rest period was administered followed by the test consisting of 5 maximal eccentric contractions. A 5-minute rest period was given in order to change the velocity, re-stabilize the subject, and minimize muscle fatigue. The subject repeated the warm-up and test procedure at the non-tested velocity. A 2 x 3 ANOVA with repeated measures on all factors (gender, condition, and velocity) was used to examine the eccentric plantar flexor peak torque data. A significant interaction was revealed between gender, condition, and velocity at the p<.05 alpha level. Additional 2 x 3 ANOVAs with repeated measures on condition and velocity were performed on the male and female eccentric plantar flexor peak torque data. Significantly higher peak torque values were revealed at 120 degrees per second than at 30 degrees per second, regardless of condition in the male and female subjects. No significant difference in peak torque values of the male subjects were revealed among the conditions. However, a significant difference in peak torque production between the conditions occurred in the female subjects. A Scheffe post-hoc test (p<.05) revealed that the female subjects produced significantly lower peak torque values in the Pro M-P Achilles Strap condition than in the control condition, at 120 degrees per second.

Mortell, Rosemarie. THE EFFECT OF A 12-WEEK RESISTIVE TRAINING PROGRAM IN THE HOME USING THE BODY BAR ON DYNAMIC AND ABSOLUTE STRENGTH IN MIDDLE-AGE WOMEN., 1992. M.S., Brigham Young University (Larry A. Tucker). (88pp 1 f $4.00) PE 3526

The purpose of this study was to determine the extent to which participation in a 12-week resistive training program utilizing the Body Bar in the home three sessions per week improves dynamic and absolute (1RM) strength in previously sedentary, non obese middle-age women compared to similar women engaged in a three session per week walking program. A pretest-midtest-posttest design was employed with subjects randomly assigned to either the resistive (N=30) or control group (N=30). Resistive subjects participated in a 12-week, 3 day/week resistive training program using the Body Bar in their own homes, while the control subjects participated in a 12-week, 3 day/week walking program. All subjects were tested on dynamic and 1 RM strength variables. Resistive trainers performed significantly better than the controls across the 12-week training period in all strength variables even after controlling for potential confounders. Number of workouts performed and average intensity of each workout were both significant predictors of strength improvements in the resistive trainers. The Body Bar is a simple apparatus that can be used in the privacy and convenience of the home. If used regularly, improvements in dynamic and 1 RM strength can be expected.


This study examined the relationship between diet composition and body fat percentage in 203 adult males. Subjects completed a written questionnaire regarding lifestyle, including exercise participation habits, demographic data, and the diet section of the National Cancer Institute’s Health Habits and History Questionnaire by Block. Skinfold-thickness measures were used to determine body-fat percentage of each subject. A single stage treadmill test was used to estimate VO2 max for each subject. Results showed that intake of carbohydrate (total and complex) was inversely associated and dietary fat was directly related with adiposity, without and with control for multiple potential confounding factors: age, total energy intake, and aerobic fitness level or weekly exercise duration. Fiber intake was also inversely related to body fat after adjustment for the control variables. Evidently, diet composition plays a significant role in obesity beyond dietary energy intake.
Ploeger, Robin. THE EFFECTS OF THREE SELECTED TRAINING PROGRAMS ON SHOULDER EXTERNAL ROTATION STRENGTH, FLEXIBILITY, AND THROWING VELOCITY IN COLLEGIATE BASEBALL PLAYERS, 1993. M.S., Brigham Young University (Earlene Durrant). (113pp 2 f $8.00) PE 3530

We initiated this study to determine the effects of three training programs on flexibility and strength of the rotator cuff muscles to be utilized in developing a prophylactic program to prevent impingement syndrome. Effects of this program on throwing velocity were also investigated. Twenty-six members of the Brigham Young University baseball team were randomly assigned to either the control group or one of three treatment groups. The groups were: 1) strengthening only; 2) flexibility only and, 3) strengthening and flexibility. All subjects were tested to determine range of motion of shoulder internal and external rotation, strength of the internal and external rotators, and throwing velocity prior to beginning the 6 week training program and at its conclusion. No significant increases were found for any of the dependent variables. According to the trends seen in our data, these exercises may help to increase flexibility and strength of the rotator cuff if performed as a prophylactic program to prevent impingement syndrome.


A Bongo Board was used to investigate the influence of cryotherapy, Aircast® Sport-Stirrup bracing, and a control condition on total body balance and proprioception. Subjects were 25 males and females with no history of lower extremity pathology within 1 year and no vasospastic disorders or hypersensitivity to cold. Bongo Board proficiency was established prior to the testing sessions in order to minimize the learning effect. Proficiency was defined as the ability to stay in balance for at least 40 seconds in a 1-minute trial. Treatment conditions consisted of: cryotherapy; Aircast® Sport-Stirrup ankle braces; or control, with neither cryotherapy or Aircast® Sport-Stirrup ankle braces. Treatment conditions were randomly ordered on 3 separate testing days. Testing consisted of a running time, 1-minute warm-up, and a 1-minute pretest. Each test session included a 20 minute treatment period between the pretest and the first posttest. During this time, one of the aforementioned treatment conditions was administered. Treatment was followed by 5 1-minute data collection posttests with 1 minute rest intervals between tests. Data analysis consisted of a 3 x 6 analysis of variance (ANOVA) with repeated measures at the p<.05 alpha level. The F value indicated a significant interaction effect between condition and test. Three subsequent 2 x 6 ANOVAs were performed to compare brace condition to cryotherapy and control conditions, and cryotherapy and control conditions individually. Results revealed a significant decrease in total body balance only during the first 3 minutes post cryotherapy. However, no significant effect on total body balance was indicated 4 to 10 minutes post cryotherapy. Results revealed no significant effect on total body balance during any of the brace posttests. However, a significant increase in total body balance was revealed when the first brace posttest was compared to brace posttests 2, 3, and 4. Finally, results revealed no significant effect on total body balance in the control posttests.


The purpose of this study was to determine whether a semirigid ankle orthotic device (Aircast Sport Stirrup, Aircast Inc., Summit, NJ) had a significant effect on stabilization times in a functional, dynamic testing situation. Each subject was required to hop medially, laterally and from a designated height onto a platform and stabilize their foot. A Biotran (Impulse Technology Inc., Bay Village, OH) was used to measure foot oscillations which determined stabilization time. For every subject, three trials for each test were performed with an Aircast and with “no support.” Results indicated that a 2x3 analysis of variance (ANOVA) found no significant difference between the Aircast and no support conditions on a low sensitivity setting at the p=0.05 level. A one way repeated measures ANOVA showed no significant differences between Aircast and no support conditions at a high sensitivity setting. An interclass correlation coefficient analysis for reliability revealed a moderate relationship for the low setting and a strong relationship for the high setting. Conclusions involve a discussion on the Biotran’s measuring capabilities, the design of this study as it relates to previous research, and considerations for future studies.

Sabo, James M. AN ANALYSIS OF NATIONAL ATHLETIC TRAINING ASSOCIATION ACCREDITED EDUCATION PROGRAM FACILITIES FOR THE ATHLETIC TRAINER, 1994. Ed.D., West Virginia University (Carl Bahneman). (446pp 5 f $20.00) PE 3537

The athletic training profession is constantly changing. Athletic trainers prevent, evaluate, treat and rehabilitate injuries. They develop weight training, conditioning and nutrition programs. They involve themselves in student counseling, administration and advising. The athletic training room is the primary facility for clinical athletic training experience. With such a large amount of time devoted here, inadequate clinical practice facilities may hamper the educational process. The purposes of this study are to 1) determine the present and 2) develop the
and on separate days. During the exercise sessions VO2 turn/min), on both ski ergometers in random order: this study compared the physiological responses to 20 min of simulated downhill skiing between the NordicSport™ and Skier’s Edge™ downhill ski ergometers. Experienced male skiers (N=15, age=18-34 yrs.) volunteered as Ss. Pretest measurements included a treadmill VO2max test and % body fat (BF) by skinfolds (VO2max=58.6 ml/kg/min, BF=12.9%). Each S performed 20 min of steady state exercise, at a cadence eliciting a HR 70-85% of HRmax (avg - 88 turns/min), on both ski ergometers in random order and on separate days. During the exercise sessions VO2 (ml/kg/min), HR (bpm), and RPE were measured each min. Responses between conditions were analyzed with paired t-tests. Analysis revealed that all responses were significantly (p<.05) higher for the NordicSport™ condition. Individual regression equations were calculated from the treadmill data to investigate the HR-VO2 relationship during downhill ski ergometry compared to that of treadmill running. Results showed that there was no significant difference between actual VO2 measured during downhill ski ergometry and VO2 predicted from the treadmill running prediction equations for both the NordicSport™ and Skier’s Edge™ conditions, at the same HR. It was concluded that both ski ergometers can provide a sport specific workout for downhill skiing. However, due to differences in ergometer design and resistance characteristics, the NordicSport™ elicited greater physiological responses at similar self-selected cadences and horizontal displacements.

Bacon, Hilda. EFFECTS OF AEROBIC EXERCISE ON THE LIPID PROFILE LEVELS OF PATIENTS WITH MODERATE TO SEVERE BURN INJURY, 1994. M.Ed., Temple University (Richard A. Berger). (66pp 1 f $4.00) PH 1371

The purpose of this study was to determine the effects of aerobic exercise on the lipid profile of patients with moderate to severe burn injury. Ten male subjects (mean age=32.6±11.1 years) with burn injury over 20% of their body (36.2±15.2% total body surface burned) entered an aerobic exercise program. Nine men and one woman (mean age 42.0±14.3 years) with similar burn injury (37.0±14.7% total body surface burned) served as controls. Blood lipid profiles (i.e., triglycerides, cholesterol, low density lipoproteins, and high density lipoproteins) were collected throughout the recovery from burn for 28 weeks. One subject was able to begin to exercise at 5 weeks of recovery, 2 subjects at 6 weeks, 2 subjects at 7 weeks, 2 subjects at 8 weeks, 1 subject at 12 weeks, and 2 subjects at 15 weeks of recovery from the burn injury. The results indicated that the control group was significantly older than the exercisers. There was no significant differences between control and exercising subjects for any of the lipid measures. The lipid data was collapsed into a pre midpoint (0 to 17 weeks) and a post midpoint (18 to 28 weeks) of recovery to ascertain if differences occurred over time. This manipulation was completed because of the variability of the lipid data which was believed to be related to the burn injury. No significant difference was observed for lipid profiles between collapsed pre midpoint and post midpoint data. It was concluded that aerobic exercise had no effect on the lipid profile during recovery of burn injured patients.

Ball, Thomas C. THE EFFECTS OF A CARBOHYDRATE-ELECTROLYTE REPLACEMENT DRINK TAKEN DURING HIGH INTENSITY EXERCISE ON SPRINT CAPACITY AT THE END OF EXERCISE, 1994. M.S., Springfield College (Samuel Headley). (101pp 2 f $8.00) PH 1372

PHYSIOLOGY AND EXERCISE EPIDEMIOLOGY

Audet, Diane. METABOLIC COST OF DOWNHILL SKI ERGOMETRY IN MALES, 1994. M.S., University of Wisconsin-La Crosse (John P. Porcari). (43pp 1 f $4.00) PH 1370

This study compared the physiological responses to 20 min of simulated downhill skiing between the NordicSport™ and Skier’s Edge™ downhill ski ergometers. Experienced male skiers (N=15, age=18-34 yrs.) volunteered as Ss. Pretest measurements included a treadmill VO2max test and % body fat (BF) by skinfolds (VO2max=58.6 ml/kg/min, BF=12.9%). Each S performed 20 min of steady state exercise, at a cadence eliciting a HR 70-85% of HRmax (avg - 88 turns/min), on both ski ergometers in random order and on separate days. During the exercise sessions VO2 (ml/kg/min), HR (bpm), and RPE were measured each min. Responses between conditions were analyzed with paired t-tests. Analysis revealed that all responses were significantly (p<.05) higher for the NordicSport™ condition. Individual regression equations were calculated from the treadmill data to investigate the HR-VO2 relationship during downhill ski ergometry compared to that of treadmill running. Results showed that there was no significant difference between actual VO2 measured during downhill ski ergometry and VO2 predicted from the treadmill running prediction equations for both the NordicSport™ and Skier’s Edge™ conditions, at the same HR. It was concluded that both ski ergometers can provide a sport specific workout for downhill skiing. However, due to differences in ergometer design and resistance characteristics, the NordicSport™ elicited greater physiological responses at similar self-selected cadences and horizontal displacements.

Bacon, Hilda. EFFECTS OF AEROBIC EXERCISE ON THE LIPID PROFILE LEVELS OF PATIENTS WITH MODERATE TO SEVERE BURN INJURY, 1994. M.Ed., Temple University (Richard A. Berger). (66pp 1 f $4.00) PH 1371

The purpose of this study was to determine the effects of aerobic exercise on the lipid profile of patients with moderate to severe burn injury. Ten male subjects (mean age=32.6±11.1 years) with burn injury over 20% of their body (36.2±15.2% total body surface burned) entered an aerobic exercise program. Nine men and one woman (mean age 42.0±14.3 years) with similar burn injury (37.0±14.7% total body surface burned) served as controls. Blood lipid profiles (i.e., triglycerides, cholesterol, low density lipoproteins, and high density lipoproteins) were collected throughout the recovery from burn for 28 weeks. One subject was able to begin to exercise at 5 weeks of recovery, 2 subjects at 6 weeks, 2 subjects at 7 weeks, 2 subjects at 8 weeks, 1 subject at 12 weeks, and 2 subjects at 15 weeks of recovery from the burn injury. The results indicated that the control group was significantly older than the exercisers. There was no significant differences between control and exercising subjects for any of the lipid measures. The lipid data was collapsed into a pre midpoint (0 to 17 weeks) and a post midpoint (18 to 28 weeks) of recovery to ascertain if differences occurred over time. This manipulation was completed because of the variability of the lipid data which was believed to be related to the burn injury. No significant difference was observed for lipid profiles between collapsed pre midpoint and post midpoint data. It was concluded that aerobic exercise had no effect on the lipid profile during recovery of burn injured patients.

Ball, Thomas C. THE EFFECTS OF A CARBOHYDRATE-ELECTROLYTE REPLACEMENT DRINK TAKEN DURING HIGH INTENSITY EXERCISE ON SPRINT CAPACITY AT THE END OF EXERCISE, 1994. M.S., Springfield College (Samuel Headley). (101pp 2 f $8.00) PH 1372
The purpose of this study was to investigate the effects of ingesting a 7% carbohydrate-electrolyte (CE) replacement drink on sprint capacity immediately following 50 minutes of high intensity stationary cycling. After an overnight 12-hour fast, eight trained male cyclists (mean VO_{max} = 61.7 ml·kg^{-1}·min^{-1}) performed two 50-min simulated time trials on a Monark stationary cycle ergometer. In double-blind, counter balanced trials, subjects consumed 2 ml/kg BW of either the CE or a flavored water placebo (PL), at 10, 20, 30, and 40 min during the time trial. Work rate during the time trial was set at 75% of the maximal work load attained during maximal oxygen uptake testing on a metabolic cart, using a standard GXT. This equated to a mean relative intensity of 80.6 and 79.8% VO_{max} for the PL and CE trials, respectively (p>.4). At the conclusion of each 50 min time trial, subjects immediately performed a Wingate Anaerobic Power Test at a resistance setting of .075 Kp/Kg BW. Peak power, mean power, and minimum power were significantly higher for the CE trials (p<.05). Mean RPE (recorded every 5 minutes during the time trial) was significantly lower for the CE trial (p<.01). Mean heart rate and fatigue index were not different between trials. These results suggest that sprint performance following a high intensity simulated time trial of only 50 minutes can be improved with periodic consumption of CE during the ride particularly following an overnight fast when liver glycogen is likely to be low. These findings have obvious implications for competitive cycling where sprint capacity at the conclusion of a race is an important determinant of race success.


This study looked at the chance of error that a wrestling and weightlifting workout had on the proximity of body fat percent measurements of wrestlers. The study compared a pretest measurement to the following posttest measurements: immediate, 30, 60, and a 90 minute posttest. A second part of the study compared the effects on body fat percent between a wrestling and weightlifting workout. The body fat percent was determined by using the Wisconsin Interscholastic Athletic Association (WIAA) standards by using skinfold measurements. There were three sites used (triceps, subscapular, and umbilical) to determine the wrestler’s body fat percent. Subjects were 19 college wrestlers ranging from 18 to 24 years of age. A paired t-test was performed to compare the pretest to posttest measurements on body fat percent. A paired t-test was also used to compare the effects on body fat percent between a wrestling workout and weightlifting workout. The body fat percent for the wrestling workout and the weightlifting workout was significantly different (p<.05) from the pretest measurements during the following posttest times: 30, 60, and 90 minutes after each workout. The body fat percent was significantly different (p<.05) when the wrestling workout was compared to the weightlifting workout during the following measurements: pretest, immediate, 30, 60, and 90 minute posttests. These data suggest that each workout had an effect on skinfold measurements taken following the workout. The body fat percent decreased with each time period following both workouts. However, the immediate posttest for both workouts was not significantly different. This is contrary to what the WIAA suggests, which is not to take skinfold measurements immediately after a workout. Despite what has been found, it would be best to take skinfold measurements before a workout or on a separate day of a workout.


The researcher accumulated and organized information pertaining to the development of graded exercise testing using the documentary research method. Published material related to the development of graded exercise testing was obtained through an extensive library search. In addition, personal interviews were conducted with credible researchers and health professionals. The methodology utilized in this study enabled the researcher to organize the historical landmarks of graded exercise testing and to detect trends in its development. An analysis of the information obtained indicated that: (a) researchers had overcome many obstacles to improve the diagnosis and assessment of functional capacity of patients with coronary artery disease; (b) as different segments of the health-care field collaborated to make exercise testing safe for cardiac patients, many protocols were developed which could be applied to diverse populations; and (c) current and ongoing research in data collection systems is making graded exercise testing a more useful tool in the diagnosis of coronary artery disease.

Braiden, Russell W. THE EFFECT OF COCAINE ON MUSCLE CARBOHYDRATE METABOLISM AND ENDURANCE DURING HIGH INTENSITY EXERCISE IN RATS, 1993. M.S., Brigham Young University (Robert K. Conlee). (61pp 1 f $4.00) PH 1375

Thirty male rats (10 animals/group) were injected i.p. with either saline or one of two doses of Cocaine-HCL (12.5 or 20.0 mg/kg). Ten minutes later they began running at 56 m/min on a rodent treadmill. The run time to exhaustion for the 20.0 group was significantly less than the saline animals. Cocaine (20.0 mg/kg) plus high intensity exercise had a significant detrimental impact on carbohydrate metabolism. Plasma and muscle lactate concentrations
were elevated more than three-fold above saline values. In addition, white muscle glycogen concentrations were significantly depleted in both the 12.5 and 20.0 animals. It was concluded that premature fatigue occurred due the dramatic rise in lactate levels, and to a lesser degree, by glycogen depletion. This phenomenon is thought to result from the vasoconstrictive property of the drug as well as its ability to exaggerate the normal catecholamine response to exercise.

Casey, Kevin M. CONCENTRIC AND ECCENTRIC STRENGTH DIFFERENCES IN THE LEAD AND BACK LEGS OF DIVISION I COLLEGE LEVEL FENCERS, 1994. M.A., University of North Carolina at Chapel Hill (William Prentice, Jr.). (52pp 1 f $4.00) PH 1376

Considerable research has been completed that focuses on the concentric (conc) quadriceps strength in the lead leg (LL) and back leg (BL) of college and elite level fencers. Studies determining eccentric (ecc) strength imbalances are limited. The focal points of this study were to determine if eccentric strength and strength ratios vary significantly between the LL and BL. Thirty college-aged varsity fencers were strength tested concentrically and eccentically at speeds of 60 and 180 degrees per second for the LL and BL knee extensors (quadriceps) and knee flexors (hamstrings) on the Kin-Com isokinetic dynamometer. Statistically significant strength imbalances were found between the lead and back legs, speed of movement, contraction type, gender and skill levels. It was theorized that these strength imbalances progress as the fencing athlete continues to compete on a competitive level. The risk of injury may potentially be higher because of the strength asymmetries found, and the risk may also increase as the fencer continues to compete.

Cooper, Trevor K. PERIPHERAL CHEMORESPONSIVENESS AND EXERCISE INDUCED ARTERIAL HYPOXEMIA IN HIGHLY TRAINED ENDURANCE ATHLETES, 1993. M.S., University of British Columbia (Donald C. McKenzie). (118pp 2 f $8.00) PH 1377

To determine whether highly trained endurance athletes (HT) who develop exercise induced arterial hypoxemia (EIH) also demonstrate reduced peripheral chemoresponsiveness (PC) during exercise, twelve (N=12) HT male cyclists were selected for study. Basic pulmonary function data (FEV1=4.69±0.66 L, FVC=6.12±0.82 L, FEV1/FVC=0.77±0.08, FEFmax=10.52±1.57 L·sec⁻¹, and MVV=194±21 L·min⁻¹) were obtained on all subjects. Subjects exercised on a cycle ergometer to exhaustion to determine their maximal aerobic capacity (VO2max=5.08±0.32 L·min⁻¹, 66.6±4.7 mL·min⁻¹·kg⁻¹), and ventilatory threshold (VO2TH=3.29±0.12 L·min⁻¹, 44.3±4.2 mL·min⁻¹·kg⁻¹). Oxygen saturation of arterial hemoglobin (SaO2max) was monitored with an ear oximeter (Hewlett-Packard, 47201A), to determine whether subjects exhibited EIH (SaO2max<91%) during the maximal cycle ergometer test. Subjects with SaO2max<91% were placed in the normal saturation group (NOS, SaO2max=93.4±0.4 %) while subjects whose SaO2max<91% were placed in the low saturation group (LOS, SaO2max=89.9±20.9 %). Ventilatory responses to hypercapnic (13% CO2, 21% O2, 66% N2) and hyperoxic (100% O2) gas mixtures were determined at rest, and during exercise on a cycle ergometer at approximately 25% VO2max, 50% VO2max, VO2TH. Hypercapnic peripheral chemoresponsiveness was lower in LOS subjects than NOS subjects and increased in both groups from rest to 50% VO2max. Hyperoxic peripheral chemoresponsiveness was not different in LOS and NOS subjects and did not change with exercise. Pre-stimulus S02 fell significantly during exercise in all subjects with LOS having lower S02 than NOS at VO2TH during the hypercapnic chemoresponsene tests only. No evidence for a relationship between pre-stimulus S02 and either hypercapnic or hyperoxic peripheral chemoresponsiveness was found. The results of this study provide information which may help explain variations in the ventilatory response to exercise in athletes. Additionally, data from this study suggest a role of altered ventilatory control in highly trained endurance athletes who do and do not demonstrate exercise induced arterial hypoxemia.

Couch, Lorinda C. RESTENOSIS RATE AFTER PERCUTANEOUS TRANSLUMINAL CORONARY ANGIOPLASTY IN CARDIAC REHABILITATION PROGRAM PARTICIPANTS, 1994. M.S., University of North Carolina at Greensboro (Don Morgan). (52pp 1 f $4.00) PH 1378

The purpose of this retrospective study was to determine the 6 month restenosis rate of comprehensive cardiac rehabilitation program participants following percutaneous transluminal coronary angioplasty (PTCA) and differentiate between clinical and non-clinical variables that may influence restenosis rate. Subjects were 48 males and 19 females who underwent PTCA and comprehensive cardiac rehabilitation between January 1, 1991 and June 30, 1992. The patients attended a minimum of 3 months of cardiac rehabilitation, which involved regular, supervised exercise training, dietary management, extensive educational lectures and psychological intervention. Gender, diabetes, history of myocardial infarction, vessel type, number of PTCA sites (1 or >1), and smoking status were investigated as clinical variables that might predict restenosis. At 6 months’ follow-up of 67 patients, restenosis occurred in 12 patients (17.9%). Chi-square analysis showed that diabetes was the only clinical variable which dichotomized groups on restenosis rate. Subjects with diabetes reported a 50% restenosis rate compared to 14.8% in the non-diabetic group. attendance of the cardiac rehabilitation program participants was also analyzed using analysis of variance. Subjects displaying restenosis...
attended an average of 35.25 days, whereas subjects without restenosis attended an average of 30.65 days during the 6-month follow up period. It is speculated that the patients with restenosis may have attended more due to their unstable condition. In conclusion, diabetes was the only clinical variable found that had an influence on restenosis rate in the cardiac rehabilitation subjects. The adoption of a comprehensive cardiac rehabilitation program after PTCA was associated with a lower risk of 17.9% restenosis rate when compared to approximately 30% rate found in the clinical literature. Therefore, a comprehensive cardiac rehabilitation program might provide an effective alternative treatment to reduce the risk of restenosis in the PTCA patient.

Danner, Tracy. RUNNING ECONOMY FOLLOWING AN INTENSE CYCLING BOUT IN TRAINED FEMALE DUATHLETES AND TRIATHLETES, 1993. M.S.Ed., Northern Illinois University (Sharon Ann Plowman). (78pp 1 f $4.00) PH 1379

The purpose of this study was to evaluate the influence of a preceding intense cycling bout on subsequent running economy in trained female duathletes and triathletes. Thirteen female duathletes and triathletes (age=27.5 ± 3.36 yrs.) took part in three testing sessions: (a) measurement of running economy at 169, 177, 196, and 215 m·min⁻¹ and running VO₂_{max}; (b) remeasurement of running economy and measurement of cycling VO₂_{max}; and (c) a 45-minute cycling bout at 70% of cycling VO₂_{max} immediately followed by measurement of running economy. Intraclass correlation coefficients between Day 1 and Day 2 running economy values were 0.31, 0.63, 0.75, and 0.78 at running velocities of 169, 177, 196, and 215 m·min⁻¹, respectively. A systematic difference occurred at 169 m·min⁻¹ with mean VO₂ being higher on Day 1 than Day 2 (P=0.0097), while running economy values were found to be consistent between Day 1 and Day 2 at 177 m·min⁻¹ (P=0.056), 196 m·min⁻¹ (P=0.043), and 215 m·min⁻¹ (P=0.296) m·min⁻¹. Dependent t-tests showed significantly higher running economy values [169 m·min⁻¹: t(12)=6.74, P=0.0002; 177 m·min⁻¹: t(12)=6.35, P=0.0002; 196 m·min⁻¹: t(12)=5.16, P=0.0002; 215 m·min⁻¹: t(12)=4.03, P=0.0016], but not blood lactate concentrations [169 m·min⁻¹: t(12)=0.84, P=0.417; 177 m·min⁻¹: t(12)=0.88, P=0.394; 196 m·min⁻¹: t(12)=0.29, P=0.779; 215 m·min⁻¹: t(12)=1.50, P=0.158] following the submaximal cycling bout compared to the control condition (Day 2), at each of the four test velocities. The results of this study showed that an acceptable measure of running economy for female duathletes and triathletes can be attained in two test sessions under standardized conditions. Running economy was significantly impaired following a 45-minute intense cycling bout in female duathletes and triathletes, but lactate values remained constant.


The purposes of this study were to determine: a) the reliability of the PACER (Progressive Aerobic Cardiovascular Endurance Run) and agility runs; b) the relationship between VO₂_{max} scores calculated from the PACER and one-mile run (1-MR); c) the influence of agility on PACER and 1-MR performances; and d) to compare the influence of agility on the PACER and 1-MR in fourth- and fifth-grade students. Subjects were 62 males and 54 females (M age=10±0.8 years) who performed the agility run twice, the
PACER twice, and the 1-MR once. Each test was separated by at least 48 hours. Results indicated that both the PACER (in levels, R=.82; laps, R=.84; predicted VO$_{2\text{max}}$, R=.84) and the agility run (R=.92) were reliable tests in this population (p<0.05). The PACER and 1-MR had a moderately high correlation with each other in laps and time (r=-.63 males, r=-.57 females), and in predicted VO$_{2\text{max}}$ values (r=.64 males, r=.50 females). The majority (>77%) of students either passed or failed both the PACER and 1-MR criterion-referenced standards. This indicates that the cutoffs for the standards on the PACER and 1-MR are equivalent and reliable in practical terms. Zero order correlations between the agility run and PACER (r=-.45 males, r=-.39 females) and 1-MR (r=.38 males, r=.31 females) indicated that between 10 and 20% of the endurance run performance was accounted for by agility in the respective tests. When agility was held constant, the variance between the PACER and the 1-MR and between the predicted VO$_2$'s from the PACER and 1-MR decreased by 5-10%, confirming that agility is as important in the mile run as in the PACER. It was concluded that the PACER test is a reliable test which measuring primarily the same physical fitness attribute as the 1-MR with similar criterion referenced standards and without being unduly influenced by agility. Therefore, the PACER and 1-MR tests can be used interchangeably in this age group.


The present exploratory study examined the effects of a six-month weight training program (n=12) on bone density. The results were compared to a control group (n=14). The weight training consisted of exercises specifically designed to stress the spine and hips. Weight training produced mean strength gains of 159% (overhead press), 85.56% (leg press), and 91.19% (calf raises). Both groups experienced losses in wrist bone density of 0.71% and 1.04%, controls and weight training groups, respectively. Both groups had gains in hip bone averaging 1.1% in the controls and 1.46% in the weight training group (F(1,24)=3.06, p=.093). The weight training group experienced an increase in bone density of 1.62% in the spine; at the same time the control group had a 0.36% decrease (F(1,24)=3.18, p=.087). These results suggest that even a short term weight training can improve bone density in peri-menopausal women.
balance was used as a covariate. This indicated that
dynamic balance had an effect on the individual's max VO₂
performance on the bicycle ergometer and bench-step.
When testing an individual with a balance deficiency, as
many non-hearing individuals may have, maximal oxygen
consumption tests should be administered on pieces of
exercise equipment which require a minimal level of
balance.

Foley, Thomas S. THE EFFECTS OF THE CROSS
WALK®'S RESISTIVE ARM POLES ON THE METABOLIC
COSTS OF TREADMILL WALKING, 1994. M.S., University
of Wisconsin-La Crosse (Nancy K. Butts). (56pp 1 f
$4.00) PH 1384

The recently developed CROSS WALK® exercise treadmill
incorporates resistive arm poles designed to increase the
metabolic costs associated with walking. Twenty-nine
healthy men (mean age, 24.2 yr) were recruited to study
the physiological effects of utilizing the arm poles during
normal treadmill walking at 2, 3, and 4 mph at a 3% grade.
Ss walked at each test speed for 5 min with arms and 5 min
without arms, achieving steady state HR and VO₂ at each
of the 6 stages. The arm poles increased VO₂ (ml/min-1) by
an average 58% and HR by an average of 32% above
normal walking. Using arm poles increased RPE to a much
higher exercise intensity levels during treadmill walking without corre-
sponding increases in perceived cardiovascular strain.

Foran, Joseph F. PREDICTING MUSCLE FIBER TYPE
THROUGH SELF-REPORTING, 1993. M.S., Springfield
College (H. Joseph Scheuchenzuber). (75pp 1 f
$4.00) PH 1385

The preferences of adult subjects concerning selected
physical fitness activities were obtained by a questionnaire
and correlated with an estimated percentage of fast-twitch
fibers (EPFTF) present within the quadriceps muscle.
Healthy males (N= 44) between the ages of 18 and 35
participated. The testing instruments used were the Kinetic
Communicator (Kin Com) and the Self-Reporting Ques-
tionnaire (SRQ). The convergent validity of the SRQ was
estimated by determining the relationship of the score from
the questionnaire and EPFTF obtained from the biome-
chanical measure involving both isokinetic and isometric
measures. During the isokinetic test each subject was asked
to perform 6 maximal concentric contractions at a test
speed of 180 deg/s with the highest peak torque value
recorded. During the isometric test subjects were tested at
90 deg pushing minimally, and for the second contrac-
tion were tested at 105 deg pushing maximally. A regression
equation was utilized to transform the isokinetic and
isometric values into an EPFTF. The responses from the
SRQ did not correlate with EPFTF values indicating the
difficulty in predicting from self-report measures.

Frey, Bernd. COMPARISON OF BODY COMPOSITION
BETWEEN GERMAN AND AMERICAN ADULTS WITH
Illinois University (James H. Rimmer). (65pp 1 f
$4.00) PH 1386

The purpose of his study was to determine body composi-
tion levels among 210 adults with mental retardation
residing in two different residential settings in the United
States and Germany. Subjects' mean age was 31.7 years.
Skinfold measurements were used to determine percent
body fat (PBF), and height and weight were used to
compute body mass index (BMI). Results indicated that
PBF was significantly higher among females (p<.000),
individuals in the institutional setting had significantly
lower PBF and BMI levels (p<.000) than individuals in the
family settings, and PBF and BMI levels in Germany
(p<.000). These findings indicate a need for more investiga-
tion into the caloric intake, energy expenditure, lifestyles
and metabolic characteristics of adults with mental
retardation living in the United States and Germany,
specially focusing on living arrangement and level of
mental retardation.

Garcia, Susan C. VALIDITY OF THE SIT-AND-REACH
TEST FOR MALE AND FEMALE ADOLESCENTS, 1994.
M.S.Ed., Northern Illinois University (Sharon Ann Plow-
man). (58pp 1 f $4.00) PH 1387

The purpose of this study was to determine the validity of
the sit-and-reach test as a measure of low-back and
hamstring flexibility for male and female adolescents(15-18
years old). The subjects were 109 (females, n=55 and male,
n=54) high-school students. The subjects performed a brief
warm up prior to their testing session. Each subject
completed the sit-and-reach (S-&-R), the modified-
Schober(M-S) to measure low-back flexibility, the passive-
straight-leg-raise(PSLR) and the active-knee
extension(AKE) tests to measure hamstring flexibility in a
counter-balanced order. There was a moderate Pearson
product moment correlation between the S-&-R and the
AKE test(r=.61) and the S-&-R and the PSLR test(r=.67) for
the females. However, there was a poor correlation
between the S-&-R and the M-S(r=.28). The males also had
a moderate correlation between the S-&-R and the AKE
test(r=.63) and the S-&-R and the PSLR(r=.64). The
correlation between the S-&-R and the M-S(r=.32) was
poor. A stepwise multiple regression analysis was completed
to determine the amount of variance for the S-&-R test that
could be explained by the M-S. When the first
predictor in the regression equation was the AKE test, the
M-S explained an additional 4% of the S-&-R variance for
females and 2% for males. When the PSLR test was the first
predictor in the regression equation, the M-S explained an additional 7% of the S-R variance for both male and female subjects. It was concluded that the sit-and-reach test is not a valid measure of low-back flexibility in either male or female adolescents.

Gow, Andrew J. THE EFFECT OF EXERCISE ON GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE AND SUPEROXIDE DISMUTASE ACTIVITIES IN THE POST-ISCHEMIC HEART, 1994. M.Ed., Temple University (Zebulon V. Kendrick). (75pp 1 f $4.00) PH 1388

The purpose of this study was to investigate the training effects of high intensity exercise (sprint training) and endurance exercise on the myocardial activity of glycerinaldehyde-3-phosphate dehydrogenase and superoxide dismutase in rat heart after myocardial stunning. Sprint trained animals were trained 5 days per week, for 6 weeks, at a grade of 15%, in 5 bursts of 1-minute at 75 m/minute with 1-minute intervals at 20 m/minute. Endurance-trained animals were trained 5 days per week, for 6 weeks, running for 1 hour at 20 m/minute, 0% grade. Glycerinaldehyde-3-phosphate dehydrogenase activity was significantly greater in the sprint-trained animals (23.5 ± 4.5 units/mg) than either endurance-trained (14.2 ± 1.4 units/mg) and sedentary animals (15.9 ± 0.9 units/mg). Exercise training had no significant effect on superoxide dismutase activity. However, mean superoxide dismutase activity was approximately 60% greater in sprint-trained animals compared to endurance-trained and sedentary animals. The increased activity of glycerinaldehyde-3-phosphate dehydrogenase in sprint-trained animals may have provided protection from myocardial stunning.


This purpose of this study was to demonstrate familial patterns of maximal aerobic power (VO2max) and physical activity levels. Subjects consisted of 24 biological families, both parents plus one or more child 7-12 years of age. Subjects had VO2max measured during treadmill testing both parents plus one or more child 7-12 years of age. Contingency table factors are related, 36 non-smoking healthy men were divided into hypoxicemic (HYP; n=13) or normoxicemic (NOR; n=15) groups based on arterial oxygen saturation (SaO2; HYP <90%; NOR >92%) observed during VO2max. Men whose SaO2 fell between these values (n=8) were not further included. Research suggests that VO2max is im-

Han, Dong H. COCAINE AND EXERCISE: TEMPORAL CHANGES IN THE PLASMA CONCENTRATIONS OF CATECHOLAMINES, LACTATE, GLUCOSE, AND COCAINE, 1994. Ph.D., Brigham Young University (Robert K. Conlee). (134pp 2 f $8.00) PH 1390

Rats were randomly assigned to one of four treatment groups: saline-rest (SR), saline-exercise (SE), cocaine-rest (CR), and cocaine-exercise (CE). Blood samples were obtained through venous catheter at -90, -40, 1, 2, 3, 4, 7, 10, 13, 16, 19, 26, and 36 min after intravenous injection of cocaine (5 mg/kg) or saline (1 ml/kg). The trend analysis of epinephrine, norepinephrine, and lactate concentrations revealed that all were increased by SE and CR compared to SR. However, the combined effect of CE on plasma epinephrine, norepinephrine, and lactate levels far exceeded the addition of either treatment (SE and CR) alone. Blood glucose values were significantly depressed in the CE while the opposite trend was observed in the CR. There was no difference in the response patterns of plasma glucose between SR and SE treatments. Plasma cocaine concentration reached its peak in less than 2 min after iv injection in both CR and CE, but the peak was higher in CE. However, these concentration differences disappeared when exercise was terminated. The plasma elimination half-life of cocaine was not different between CE (13.9 ±2.7 min) and CR (11.6 ±1.8 min).

Harms, Craig A. INADEQUATE HYPERVENTILATION AS A DETERMINANT OF EXERCISE INDUCED HYPOXEMIA, 1994. Ph.D., Indiana University (Joel M. Stager). (118pp 2 f $8.00) PH 1391

Is inadequate hyperventilation a cause of the exercise induced hypoxemia observed in some athletes during intense exercise? If so, is this related to low peripheral chemosensitivity? To test the hypothesis that the three factors are related, 36 non-smoking healthy men were divided into hypoxicemic (HYP; n=13) or normoxicemic (NOR; n=15) groups based on arterial oxygen saturation (SaO2; HYP <90%; NOR >92%) observed during VO2max. Men whose SaO2 fell between these values (n=8) were not further included. Research suggests that VO2max is improved by eliminating the hypoxemia at SaO2 <92%; therefore, this value (via ear oximetry; HP 47201A) served as the hypoxemia criteria. Ventilatory parameters were collected at rest, during a treadmill VO2max test, and during a five min run at 90% VO2max. Differences in ventilation which occurred between groups during VO2max also occurred during submaximal (90% VO2max) exercise. Peripheral chemosensitivity at rest was assessed via hypoxic ventilatory response (HVR; Weil et al., 1970) and
hypocapnic ventilatory response (HCVR; Read et al., 1967). VO₂max was not significantly different for NOR and HYP (62.4±7.5 ml·kg⁻¹·min⁻¹ vs 66.0±7.9 ml·kg⁻¹·min⁻¹ resp). SaO₂ was 93.8±0.9% (NOR) and 87.7±2.0% (HYP) (p<.01). PAO₂ (121.5±1.9 mmHg vs 112.4±3.0 mmHg), V′ₐ (108.3±7.7 mmHg vs 98.7±9.1 mmHg), and V′ₐ/VO₂ (28.6±2.2 vs 25.2±2.2) were lower for HYP (p<.01). PAO₂ and V′ₐ/VO₂ correlated to SaO₂ (r=.84, r=.70, resp), HVR (0.61±0.36 l·% SaO₂⁻¹ vs 0.15±0.07 l·% SaO₂⁻¹) and HCVR (2.73±0.66 l·mmHg⁻¹ vs 1.78±0.35 l·mmHg⁻¹) were lower for HYP (p<.01). HVR was related to V′ₐ/VO₂ (r=.43) and HCVR was related to V′ₐ/VO₂ at VO₂max (r=.59); (p<.05). Multiple regression analysis revealed that HCVR and not HVR was primarily involved in exercise ventilation differences. In summary, the results suggest that inadequate hyperventilation, related to low peripheral chemosensitivity, is a significant mechanism in the hypoxemia experienced by some athletes during intense exercise.

Hendrickson, Thomas L. THE PHYSIOLOGICAL RESPONSES TO WALKING WITH AND WITHOUT POWER POLES™ ON TREADMILL EXERCISE, 1993. M.S., University of Wisconsin-La Crosse (John P. Porcari). (52pp 1 f $4.00) PH 1392

Power Poles™ are specially constructed, rubber-tipped ski poles designed for use during walking. The user simulates the arm motion of cross-country skiing while walking, thus increasing the muscle mass used during exercise. This study investigated the potential increases in exercise intensity and energy cost associated with the use of the walking poles. Thirty-two healthy subjects (M=16; females=16, age=23.3 yrs, ht=69.8 in, wt=172.1 lb, VO₂max=58.9 ml·kg⁻¹·min⁻¹; F=16, age=23.9 yrs, ht=66.1 in, wt=140.3 lbs, VO₂max=49.5 ml·kg⁻¹·min⁻¹) completed a treadmill VO₂max test and two randomly assigned, submaximal walking trails (no poles, with poles) on separate days. Each submaximal walking trail was conducted on a level treadmill, for 20 min, at the same self-selected pace (M: x=4.27 mph; range=3.98 - 4.58; F: x=3.77 mph, range=3.00 - 4.48). VO₂max; 66.0±8.55 ml·kg⁻¹·min⁻¹. Stepwise multiple regression analysis (N =51) to estimate VO₂max from a GXT treadmill protocol (mean±SD; VO₂max=49.39±8.55 ml·kg⁻¹·min⁻¹). Stepwise multiple regression analysis (N =51) to estimate VO₂max from the 1-mile track jog produced the following validation (V) model: VO₂max=107.4+8.114 x Gender (0=female; 1=male) - 0.1623 x Body Mass (kg) 1.47 x Jog Time (min) - 0.2121 x Heart Rate (bpm) and resulted in R₉₀²=.89, SEE=3.99 ml·kg⁻¹·min⁻¹. Cross validation (CV) of the 1-mile track jog comparing observed and estimated VO₂max (N=49) resulted in R=.89, SEE=3.80 ml·kg⁻¹·min⁻¹. Multiple regression

<table>
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<th>VO₂ (ml·kg⁻¹·min⁻¹), HR (bpm), %HRmax, RPE, Kcal/min</th>
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<td>No poles</td>
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*significantly different than no poles (p<.05)

There were no differences in the responses between males and females, thus data were collapsed across gender. It was found that the use of Power Poles™ significantly (p<.05) increased VO₂, HR, and Kcal/min by approximately 20% compared to walking without poles. There were significant (p<.05) differences in calculated oxygen pulse values (mlO₂ / beat) between conditions, indicating that the changes were apparently due to the increased muscle mass involved in the exercise and not due to a pressor response mechanism. It is concluded that the use of Power Poles™ can increase the intensity of walking at a given speed, and thus may provide additional training benefits to walkers.


Twenty-three female eumenorrheic subjects were studied to determine the association between energy balance and phases (follicular vs. luteal) of the menstrual cycle; 12 were classified physically active (PA) and 11 were classified physically inactive (PIA). The observed results of the food intake and energy expenditure data collected over one complete menstrual cycle show fluctuations do occur in energy intake, macronutrient consumption, and energy expenditure across the menstrual cycle, with amount of fluctuation varying between PA and PIA women. PA group had significantly (p<0.01) higher relative energy intake than PIA group across the menstrual cycle. A significant (p≤0.05) main effect for both PA and PIA women between menstrual cycle phase was found for energy expenditure (higher in follicular), carbohydrate (higher in follicular), protein (higher in luteal), and fat (higher in luteal). These findings suggest that menstrual cycle phase does influence the macronutrients self-selected by eumenorrheic women.

Hunt, Brian R. ESTIMATION OF VO₂(MAX) FROM A SUBMAXIMAL 1-MILE TRACK JOG FOR RELATIVELY FIT TEENAGE INDIVIDUALS, 1993. M.S., Brigham Young University (A. Garth Fisher). (76pp 1 f $4.00) PH 1394

The primary purpose of this study was to develop a submaximal field test using a 1-mile track jog to estimate maximal oxygen uptake (VO₂max) for male and female individuals, aged 13-17. A second purpose was to determine the accuracy of a 1-mile run in estimating VO₂max. VO₂ max was measured in 100 teenagers (males=50, females=50) using a GXT treadmill protocol (mean±SD; VO₂max=49.39±8.55 ml·kg⁻¹·min⁻¹). Stepwise multiple regression analysis (N =51) to estimate VO₂max from the 1-mile track jog produced the following validation (V) model: VO₂max=107.4+8.114 x Gender (0=female; 1=male) - 0.1623 x Body Mass (kg) 1.47 x Jog Time (min) - 0.2121 x Heart Rate (bpm) and resulted in R₉₀²=.89, SEE=3.99 ml·kg⁻¹·min⁻¹. Cross validation (CV) of the 1-mile track jog comparing observed and estimated VO₂max (N=49) resulted in R=.89, SEE=3.80 ml·kg⁻¹·min⁻¹. Multiple regression
analysis (N=41) to estimate VO$_{2max}$ from the 1-mile run, resulted in (V: N=41, R$_{adj}$=.88, SEE=4.15 ml·kg$^{-1}$·min$^{-1}$; CV: N=42, R=.90, SEE=3.76 ml·kg$^{-1}$·min$^{-1}$). These results indicate that a 1 mile track jog can accurately estimate VO$_{2max}$ and could reduce the problems of pacing, motivation, injury, and fatigue which are associated with maximal effort run tests.

Ienna, Tiziana M. THE ASTHMATIC ATHLETE: METABOLIC AND VENTILATORY RESPONSES DURING EXERCISE WITH AND WITHOUT PRE-EXERCISE MEDICATION, 1994. M.S., University of British Columbia (Donald C. McKenzie). (119pp 2 f $8.00) PH 1395

To determine whether asthmatic athletes have normal physiological responses to exercise without pre-exercise medication, we studied 17 female and male asthmatic subjects, 9 highly trained (HT) (age=26.1 yrs; ht=173.6±10.5 cm; wt=66.4±10.8 kg; VO$_{2max}$=57.0±4.9 ml·kg$^{-1}$·min$^{-1}$), and 8 moderately trained (MT) (age=24.1±3.1 yrs; ht=183.1±11.8 cm; wt=78.6±15.3 kg; VO$_{2max}$=51.3±4.8 ml·kg$^{-1}$·min$^{-1}$) with exercise-induced asthma (EIA) under 2 randomly assigned experimental conditions: salbutamol (S) (2 puffs=200 mg) or placebo (PL) was administered via metered-dose inhaler 15 minutes prior to exercise. The exercise task was 4 continuous 5 minute increments on an electronically braked cycle ergometer representing 25, 50, 75, and 90% of the subject’s VO$_{2max}$, VO$_2$, minute ventilation (V$\text{e}_2$), respiratory exchange ratio (RER), % saturation (SaO$_2$), and HR were continuously measured during exercise. A venous catheter was inserted in the subject’s antecubital vein to allow measurement of blood lactate (La) each minute throughout exercise and recovery. Post-medication, exercise, and recovery measurements of peak expiratory flow rates (PEFR) were made using a Mini-Wright flow meter. The data failed to show significance (p>0.05) between treatment conditions at any stage of exercise with respect to VO$_2$, V$\text{e}_2$, RER, HR, and SaO$_2$. However, among the HT group the mean HR for the 4 exercise conditions was significantly higher under placebo (151.7 (PL) vs. 147.2 (S); p=0.01). No difference was found in La during exercise or in recovery. Pre-exercise PEFR was significantly higher (582(S) vs. 545 L·sec$^{-1}$ (PL): p=0.003 ) when pretreatment was salbutamol, but prior to treatment there was no difference between the two pre-exercise PEFR’s. Mean PEFR measures for the exercise and recovery conditions were significantly higher (600.1 (S) vs. 569.6 (PL): p=0.002) with the salbutamol treatment. Scheffe’s post-hoc comparisons indicated a significant difference in mean PEFR measures with respect to the two treatments between low intensities (25% and 50%) and high intensities (75% and 90%) of exercise. There was no difference in the physiological response to exercise between groups based on training status. It was concluded that although salbutamol affects the PEFR, these asthmatic athletes do not have altered metabolic or ventilatory responses during exercise.

Johnson, Brenda M. VALIDATION OF A MODIFIED CLOSED CIRCUIT, OXYGEN DILUTION RESIDUAL VOLUME METHOD, 1993. M.S., University of Wisconsin-La Crosse (William A Floyd). (49pp 1 f $4.00) PH 1396

A modified closed circuit, oxygen dilution method for the measurement of residual volume (RV) was compared to the method described by Wilmore (1969). The major difference in equipment was the substitution of a 7 liter calibration syringe and rubber rebreathing bag for the wet spirometer in the original procedure. Duplicate measurements of RV were made with each method in random order of 90 subjects (45 M, 45 F) age 18 to 69 (mean=31 yrs). Test-retest correlations were r=.996 for males and r=.992 for females with the modified method. For the pooled data (n=90) the correlation between the criterion method and the modified method was r=.996, with a mean difference of 3 mls between methods and a standard error of prediction of 36 mls. The dead space in the modified method was 69 mls whereas the spirometer method dead space was 1.140 liters. The modified RV method has less dead space, requires less costly components, provides a faster and less cumbersome procedure, and obviates the need to maintain a fixed water level in a spirometer for constancy of dead space.

Jordan, Mary C. A COMPARISON OF INTERMITTENT EXERCISE AND RELAXATION VERSUS STEADY STATE EXERCISE ON FITNESS LEVELS AND ATTITUDES IN SEVENTH GRADE GIRLS, 1993. M.S., Brigham Young University (A. Garth Fisher). (78pp 1 f $4.00) PH 1397

The purpose of this study was to determine whether (a) an intermittent exercise and relaxation modality would have a training effect comparable to steady state exercise and (b) whether attitudes toward exercise might be improved or enhanced by this modality. Two treatment groups and a control group of seventh grade girls were pre- and posttested using a one-mile run/walk field test and an intrinsic motivation inventory. One treatment group engaged in an intermittent aerobic dance program for 30 minutes 3 days a week; the other treatment group was involved in steady state aerobic dance for 30 minutes 3 days a week. The control group was a physical education class engaged in soccer, softball and volleyball for 30 minutes 3 days a week. There were no significant differences in the gain scores between groups: -3.57 sec. (Intermittent), -5.4 sec. (Steady State), -18.2 sec. (Control). There also were no significant differences in the IMI scores. We conclude that within the scope and design of this study, neither modality improved aerobic endurance nor changed attitudes. However, it is possible that intermittent exercise may be beneficial for populations such as the less fit adult or child with limited functional capacity, the chronically and/or seriously ill, or the elderly and the obese who have difficulty with traditional physical activity programs.

This study examined the relationship between aerobic fitness and dietary intake of 205 healthy women recruited from seven local businesses (average age=35 years). Subjects' diet composition was obtained using the Health Habits and History Questionnaire developed by the National Cancer Institute, while aerobic fitness level was established using the Forest Service Step Test. Subjects were categorized into three fitness groups according to recovery pulse rates obtained from the step test. When subjects’ diets were compared, percentage of total calories from fat and carbohydrate significantly differed among the three fitness groups (p<.0001). High aerobic fitness was associated with an relatively low percent of total calories from fat (36%) and a relatively high percentage of total calories from carbohydrate (47%). After adjusting for age and smoking, diets from those in the high aerobic fitness group remained significantly different from the other two groups regarding calories from fat and calories from carbohydrate. According to this study, high aerobic fitness level is associated with healthier eating behaviors when compared to those in lower fitness categories.

Kelly, K. Patrick. EFFECT OF CHRONIC COCAINE ON SELECTED PHYSIOLOGICAL RESPONSES DURING REST AND EXERCISE IN RATS, 1993. Ph.D., Brigham Young University (Robert K. Conlee). (105pp 2 f $8.00) PH 1399

Male rats were injected i.p. with either cocaine (20 mg/kg) (C) or saline, twice daily for 14 consecutive days. On the 15th day C rats received an i.v. injection of cocaine (5 mg/kg). One-half of the chronic saline rats also received the cocaine injection [Acute group (A)] while the other half received saline (S). Immediately after injection, all rats were either rested or exercised (22 m/min, 10% grade) for 30 min. With exercise the physiological responses of A and C were different from S but not different from each other for most parameters. However, the pattern of the catecholamine response was different. Exercise increased norepinephrine (1077±98, 1670±97, 2019±60 pg/ml) and epinephrine (1006±112, 1127±124, 2454±385 pg/ml) levels in S, A, and C rats, respectively. The C values were higher than A for both catecholamines (P<.05). These results show that the combined effects of cocaine and exercise are partially altered by chronic cocaine exposure and that chronic cocaine use, coupled with exercise, could pose an acute health risk.

Knox, Kelly M. ENERGY COST OF WALKING WITH AND WITHOUT ARM ACTIVITY ON THE CROSS WALK DUAL MOTION CROSS TRAINER, 1993. M.S., University of Wisconsin-La Crosse (Nancy K. Butts). (61pp 1 f $4.00) PH 1400

The CROSS WALK Dual Motion Cross Trainer (CROSS WALK) (Proform, Logan, UT) is a motorized treadmill designed to increase the energy cost of walking by incorporating arm activity during walking, thus increasing the muscle mass used during exercise. This study investigated the potential increases in exercise intensity and energy cost associated with the use of the CROSS WALK. 37 female S (17-53 yrs) performed a 30-minute submaximal walking test at various speeds on the CROSS WALK. The test consisted of six, 5-min steady-state exercises at 2.0, 3.0, and 4.0 mph, and with and without arm activity. The steady-state variables of HR, VO2, VO2 (ml·kg⁻¹·min⁻¹), L·min⁻¹), METs, kcal, PER, and RPE were analyzed and compared. Dependent t-tests indicated that walking with arm activity significantly increased HR, VO2 (ml·kg⁻¹·min⁻¹), L·min⁻¹), METs, kcal, and RPE. Height responses significantly increased with arm activity 16.8, 25.9, and 31.1 b·min⁻¹ at walking speeds of 2.0, 3.0, and 4.0 mph, respectively. The average energy costs increased 35% with the addition of arm activity at all speeds (i.e., 2.0, 3.0, and 4.0 mph). The addition of arm activity increased the MET level by 1.76, 2.43, and 2.87 METs at 2.0, 3.0, and 4.0 mph, respectively. Significant (p<.001) differences were also found for RPE, with an average increase of 14% which paralleled the increase in HR and energy expenditure. It is concluded that the use of the CROSS WALK can increase the intensity of walking at any given speed, and thus may provide additional training benefits to walkers.


Nine active males participated in this double-blind crossover study to determine the effects of chromium picolinate (Cr-pic) supplementation on high intensity exercise performance (90%VO2max) after a high fat diet. Subjects completed two exercise trials, one after three weeks of Cr-pic (200 mg/ day) and the other following the prescribed 3 day low-CHO diet and exercise regime. During the Cr-pic trials the subjects exhibited higher RER values (p<.05), suggesting that greater amounts of CHO were metabolized. Heart rate, oxygen uptake, exercise time, and rate of perceived exertion showed no statistical significance between trials.
However, oxygen uptake and exercise time showed trends that support the hypothesis that Cr-pic improves high-intensity exercise performance. Therefore, it appears that Cr-pic positively affects exercise performance; however, further investigation is needed to add support to this finding.


The prediction of midback muscular strength (1-RM) using relative muscular endurance was examined in women. Seventy-three subjects were divided into three age groups of 20-30 yr (Group 1), 40-50 yr (Group 2), and 60-70 yr (Group 3). Testing was performed on a constant resistance lat pulldown machine. One-way ANOVA revealed significant differences between age groups for repetitions. Post hoc comparisons showed Group 3 completed significantly less repetitions than Group 1 and 2. No significant differences were noted between Group 1 and 2. 1-RM prediction equations were developed by combining Group 1 and 2 and treating Group 3 separately. The best predictors for Group 1 and 2 were repetitions (REPS), muscular endurance weight load (ME WT) and age (AGE). Group 1 and 2 prediction equation: 1-RM=2.417+(-0.117 x AGE)+(0.820 x REPS)+(1.295 x ME WT); R=.89, Adjusted R²=.82, SEE=1.85 kg. Group 3 prediction equation: 1-RM=-2.417+(-0.117 x AGE)+(0.870 x REPS)+(1.092 x ME WT); R=.91, Adjusted R²=.81, SEE=2.05 kg.

Lamb, Jennifer A. HEALTH-RELATED FITNESS IN HMONG YOUTH, 1994. M.S., University of Wisconsin-La Crosse (Lisa A. Chase). (62pp 1 f $4.00) PH 1403

This study investigated the health-related fitness of Hmong youth (male and female), grades 6-11 in the LaCrosse School District using the presently implemented physical fitness test battery. Subjects were 2,674 students, including 202 Hmong. The subjects were split into two groups, Hmong (H) and all others (AO), then subsequently divided into 3 age categories: 13 years and younger, 14-16 years, and 17 years and over. All subjects performed the following tests: sit ups (SU), mile run (MR), sit and reach (SR), flexed arm hang (FAH) or bench press (BP), and skinfold measures (SF). The results were analyzed by t-tests to determine significant differences between H and AO (p≤0.05). Current fitness levels were compared to health-related criteria for each component of fitness. Sit up score for H females, accrues all age groups fell into the suboptimal category and were significantly different from AO females in each group. Mile run scores for both the H and AO fell into the good or marginal fitness category. No significant differences were found between groups for any age classification. Sit and reach scores in all cases (except females, 14-16 years), H were significantly different from AO and fell into the above optimal category. Flexed arm hang scores H (males and females) 13 years and under were below optimal. Skinfold scores for all subjects (except H males 13 years and under) were within the optimal category for health-related fitness. This research identifies the current health-related fitness levels of students in a Midwestern school district and suggests cultural differences that may influence that fitness status. Recommendations are made for practical application and future research.

Lynes, Liliana K. THE EFFECT OF RESISTANCE TRAINING ON RESTING BLOOD PRESSURE IN HYPERTENSIVE WOMEN, 1994. M.S., University of North Carolina at Greensboro (Don W. Morgan). (242pp 3 f $12.00) PH 1404

The purpose of this study was to examine the effect of a short-term resistance training program on physiological (resting blood pressure, \( \text{VO}_{2\text{max}} \), muscular strength and body composition) and psychological (stress reactivity, perception of daily hassles, self-esteem, physical self efficacy and hostility) factors associated with elevated pressure in sedentary premenopausal women. Four volunteer females (age range= 28-43 years), selected from an initial pool of 89 individuals, participated in a 12-week low-to-moderate circuit weight training program (60 minutes-session\(^1\); three sessions-week\(^3\)). Duration remained constant and intensity was adjusted periodically to maintain a relative workload of 40\% \( \text{1 RM} \). Prior to, halfway, and immediately following the training program, resting blood pressure and muscular strength were reassessed. Body composition, estimated \( \text{VO}_{2\text{max}} \), and the psychological variables were measured prior to and upon completion of the program. The data were presented in case study form and each case was treated separately. For each case, subject description and the effect of training on physiological and psychological factors were presented and discussed. In addition, overall data were examined and compared graphically. Within the limitations of this investigation, the conclusions reached through data analysis of the population in this study were as follows: a) hypertension females can safely engage in a moderate-intensity resistance training program without negative effects on resting blood pressure. Furthermore, this type of program may elicit beneficial changes in resting blood pressure levels in women with mild hypertension; b) resistance training generally produced marked increases in muscular strength and positive changes in body composition and estimated \( \text{VO}_{2\text{max}} \); and c) circuit weight training was found to moderately decrease daily hassles ant hostility scores, and to increase self-esteem and physical self-efficacy scores in hypertensive females.

Adrenomedullated (ADM) and sham operated (SHAM) rats were injected with cocaine (20 mg/kg, ip) or saline and ran for 5 min at 56 m/min, 0% grade. In SHAM cocaine-exercise (CE) caused plasma epinephrine (EPI) values (X+sem) to rise to 27.7+6.9 nM compared to the saline-exercise (SE) 13.3+1.5 nM and ADM-CE value of 0.8+0.2 nM (p<0.05). In ADM, CE still caused glycogen in the white vastus (WV) to fall to lower levels (25.4+3.0 mmol/g) than in saline-exercise (SE) (40.5+2.4 mmol/g) (P<0.05). Plasma lactate levels were higher after CE compared to SE in ADM (17.9+2.0 vs 8.5+0.5 nM, p<0.05). These findings imply that EPI is unessential to the CE-induced exaggeration in WV glycogenolysis and lactacidemia. CE did cause an exaggerated norepinephrine (NE) (30.0+4.0 vs 9.6+1.1 nM, p<0.05, CE vs SE) and dopamine (DA) (1.0+0.1 vs 0.4+0.1 nM, p<0.05; CE vs SE) response in ADM. Perhaps the adverse effects of cocaine are mediated through the action of NE. Because in ADM, NE and DA response to CE was unimpaired, it is clear that the adrenal medulla is not the source of these catecholamines during CE.

Pethan, Scott M. EFFECTS OF TRAINING IN STRENGTH SHOES™ ON SPEED, JUMPING ABILITY, AND CALF GIRTH, 1993. M.S., University of Wisconsin-La Crosse (John P. Porcari). (42pp 1 f $4.00) PH 1406

72 collegiate males between 19-25 years of age were randomized into 1 of 3 groups (24 per group); a control group (CG), a strength shoe group (SSG), or a regular shoe group (RSG). SSG and RSG trained 3x per week for 10 weeks and followed identical programs as prescribed by the manufacturer. SSG wore the Strength Shoe™ while RSG wore their own athletic shoes. All SSG were tested before and after the 10 weeks for 40 yard dash time (40 TIME), vertical jump (VJUMP), broad jump (BJUMP), and right and left calf girth (RGIRTH & LGIRTH). RESULTS: 22 C, 14, SSG, and 16 RSG completed the study. 7 of the dropouts in SSG were due to injury; 1 of 8 dropouts in RSG was due to injury. Attendance for SSG and RSG averaged 89% of possible workouts. Changes as a result of the program are presented below:

<table>
<thead>
<tr>
<th>Group</th>
<th>40 TIME</th>
<th>VJUMP</th>
<th>BJUMP</th>
<th>RGIRTH</th>
<th>LGIRTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>+.04</td>
<td>-.4</td>
<td>+.0</td>
<td>+.1</td>
<td>+.0</td>
</tr>
<tr>
<td>SSG</td>
<td>-.06</td>
<td>+.9</td>
<td>+.9</td>
<td>+.4</td>
<td>+.3*</td>
</tr>
<tr>
<td>RSG</td>
<td>-.03</td>
<td>+.1</td>
<td>+1.1</td>
<td>+.2</td>
<td>+1.1</td>
</tr>
</tbody>
</table>

*Significant change from pretesting (p<.05).

SSG had significant (p<.05) increases in RGIRTH and LGIRTH from pre to posttesting. However, this change was not significantly (p>.05) different than either C or RSG. There were no within or between group differences for 40 TIME, VJUMP or BJUMP as a result of training. These results indicate that even though there was a tendency for training in Strength Shoes™ to improve performance, the increases were not significantly greater than training in regular athletic shoes. Additionally, the chances of injury appear to be greater when training in Strength Shoes™.

Ritzer, Christine L. STABILITY OF EXPERIENCED FEMALE LIFTERS’ HEART RATES ACROSS DAYS DURING AND AFTER PYRAMID EXERCISES OF BENCH PRESS AND PARALLEL SQUAT, 1994. M.S., University of Wisconsin-La Crosse (Nancy K. Butts). (67pp 1 f $4.00) PH 1407

This investigation compared female weight lifters’ heart rates (HR) across days for free weight pyramid lifting cycles. HRs during and after bench press and parallel squat free weight pyramid weight lifting cycles of 10, 8, 6, 4, 6, 8, and 10 repetitions at 50, 65, 75, 85, 75, 65, and 50% of 1-RM respectively, were obtained on 25 experienced female weight lifters. HRs were determined using Polar Vantage XL Heart Watch monitors programmed to record HRs at 5 sec intervals, beginning with the initial lift and ending when the HR decreased during the recovery period after the final lift of the pyramid cycle. The exact time for each lift was determined. The HR During the last 5 sec was used to represent the HR during that lift. HRs obtained immediately after the lift represented the initial recovery HR. Peak recovery HR was the highest rate obtained during the recovery period. There were no significant (p>.01) differences in HRs reported during, immediately after, or at peak recovery between test days at the respective percentages for either bench or squat cycle. HRs for squats among the various repetitions were significantly (p>.01) higher than corresponding bench HRs. There were no significant (p>.01) differences between days in the total time to complete either bench or squat cycles. The total time to complete the squat cycle was significantly (p<.001), longer than the bench cycle. Self-reported resting HRs were not significantly different (p>.01) between days. HRs measured during, immediately after, and at peak recovery for pyramid lifting cycles remained stable across days in experienced female weight lifters.


The researcher determined if regression equations could be used to estimate stroke volume (SV) in 10 healthy male subjects using electrocardiographic (ECG) parameters
during postural changes and at different exercise intensities as well as active recovery. Nifedipine, a calcium channel blocker was administered to determine if changes in ECG parameters were consistent with changes in SV. The following ECG parameters were examined: T-wave amp and RS-wave amp during exercise; and T-wave area and T-wave amp during active recovery. Exercise was conducted on a bicycle ergometer during two exercise sessions. During each session ECG recordings were taken in the supine and sitting position, as well as during exercise at 40% MHR, 60% MHR, 85% MHR, and during active recovery. No significant changes were seen in waveforms during postural changes, increasing exercise intensities, or recovery from exercise (p>0.05). Regression equations were unable to estimate stroke volume during various exercise intensities due to the inability to directly measure SV.

Ryan, Patrick T. A COMPARISON OF PHYSIOLOGIC RESPONSES TO FORWARD AND RETROGRADE SIMULATED STAIR STEPPING ON THE STAIRMASTER 4000 PT, 1993. M.S.Ed., Northern Illinois University (Sharon Ann Plowman). (51pp 1 f $4.00) PH 1409

This study compared the physiologic responses to forward and retrograde simulated stair stepping on the StairMaster 4000 PT. Twenty male subjects (mean age 23.65±1.63 yr) volunteered for this study. Subjects completed practice trial of six minutes of both forward and retrograde stepping at Level 5. Each experimental trial was divided into four three-minute stages: Level 3, Level 5, Level 7, and Level 9. Heart rate, blood pressure, and rating of perceived exertion (RPE) were recorded during the second minute of each stage. Inspired gasses were analyzed and averaged over the last two minutes of each stage. Caloric expenditure and delta efficiency were later calculated. Data were analyzed using a 2 x 4 (direction by level) ANOVA. Retrograde heart rates were significantly higher at Levels 7 and 9 (p<0.01). Retrograde responses for RPE, METs and caloric expenditure were higher at Levels 5, 7, and 9. However, the results of this study show that these differences between forward and retrograde stepping are not statistically significant.

Shea, Kyla. GENDER DIFFERENCES IN SUBSTRATE METABOLISM AND THERMOREGULATION DURING REST AND EXERCISE IN COLD AND WARM WATER, 1993. M.S., Springfield College (Vincent J. Paolone). (167pp 2 f $8.00) PH 1410

Five females and 5 males were studied to investigate possible gender differences in metabolic variables and thermoregulation during rest and submaximal exercise in cold (20°C) and warm (33°C) water. Experimental sessions were divided into 30 min of rest and 30 min of submaximal arm-cranking exercise (60% VO2 max). Baseline data for heart rate (HR), oxygen consumption (VO2), RER, blood glucose (BG), urine catecholamine concentration, core temperature (TC), mean skin temperature (Ts), and mean body temperature (Tb) were taken in a thermoneutral dry-air environment. The alpha level was set at 0.05. The VO2 of females was lower than that of males at rest and during exercise. The greater VO2 in the cold is the thermoregulatory oxygen consumption (TVO2). The TVO2 was lower for the females during both rest and exercise. There were no gender differences in HR, RER, Ts, and Tb. The Ts of males was lower only during exercise. The BG concentration of males was higher than that of females during exercise, and the urine catecholamine concentration of males was higher than that of females post-exercise, suggesting a greater reliance on carbohydrates for fuel during exercise.

Short, Kevin R. THE EFFECTS OF TWO AEROBIC FITNESS LEVELS ON EXCESS POST-EXERCISE OXYGEN CONSUMPTION IN YOUNG ADULTS, 1994. M.S., Purdue University (Darlene A. Sedlock). (95pp 1 f $4.00) PH 1411

The purpose of this study was to determine if the aerobic fitness level of subjects would influence the EPOC period. Subjects were classified as either high fit (HI) (7 men, 5 women) or average fit (AVG) (4 men, 6 women) based on VO2 peak and amount of weekly exercise. All subjects completed two randomly counterbalanced submaximal cycle ergometer tests, separated by at least 48 hours. Both tests were 30 min in duration but the intensity of one was set at 70% VO2 peak (70%), while the other was set at 1.5L O2 per min (1.5L) for all subjects. Participants reported to the lab in the morning following a 12 hour fast and 24 hour abstinence from vigorous activity. Prior to exercise, baseline metabolic rate was established during a 30 minute rest. Immediately following the completion of the exercise subjects returned to the seated position. Recovery was monitored until a 5-min average VO2 value was equal to baseline. Results indicated no differences in EPOC magnitude or duration due to fitness level. However, there were differences in EPOC due to the exercise treatments; EPOC duration was longer and of greater magnitude following the 70% than the 1.5L trial. Values for EPOC duration and magnitude for each group and trial were (mean±SD): HI 70%=41±17 min, 17±10 kcal; AVG 70%=45±11, 15±5 kcal; HI 1.5L=22±10 min, 8±3 kcal; AVG 1.5L=35 +14 min, 11±3 kcal. Differences between exercise treatments are probably due to differences in exercise intensity. Despite no differences in EPOC, HI had faster rates of HR and VO2 recovery during the first 10-15 min following both exercise trials. These findings suggest that high fitness subjects may regulate changes to an exercise stimulus more rapidly than average fitness during the initial fast portion of recovery, but that the slow portion does not differ significantly between fitness groups.

The relationship between obesity measurements with serum lipids, levels of physical activity and fat intake was examined in 316 4th and 5th grade school children. The children were divided into four obesity risk categories, based on percentiles of body fatness. Girls had a higher sum of skin fold and triglycerides than boys (p= <0.05). Boys had higher total cholesterol and physical activity levels than girls. ANOVA showed that the means of triglycerides, HDL-C, sum of two skin folds (p= 0.0001 respectively), and total cholesterol (p= 0.0024) were significantly different between the four obesity risk levels. Pearson correlation analyses showed weak but significant direct associations of obesity with total cholesterol (p= <0.05) and triglycerides (p= 0.0001). HDL-C was inversely associated with body fatness (p= <0.05). Physical activity and fat intake were not significantly associated to body fatness (p= 0.532 and p= 0.552, respectively). Multiple regression analyses found the sum of two skin folds as the variable most closely associated with body fatness (p= 0.0001). Male gender was also slightly associated (p= 0.027). The results suggest that the children at the highest percentiles of body fatness must be followed to prevent the possibility of future CHD development.


The purpose of this study was to investigate the influence an anaerobic interval training program using a slide board as a component of pre-season conditioning had on concentric and eccentric quadriceps peak torque, vertical jump height, and agility. Subjects were 12 Temple University women’s basketball players who denied history of lower extremity pathology within the last year, or any predisposing cardiorespiratory or cardiovascular conditions. Due to attrition and non-study related injuries, final analysis consisted of 8 subjects. In addition to pre-season conditioning, all subjects trained on the Euroglide slide board 3 times per week for 6 weeks following the anaerobic interval training program suggested by Improved Hunan Performance (IHP), Inc. Concentric and eccentric peak torque, vertical jump height, and agility data were collected before and after a 6-week training period. The Biodex B-2000 Isokinetic Dynamometer was used to collect right quadriceps peak torque data at 120 degrees/second through a 90° arc of motion. Concentric and eccentric data collection were randomly ordered and a 10-minute rest was administered between test modes. Vertical jump height was measured with the VERTEC®, and agility was determined with a 40-yd multidirectional run. Each subject was allowed 3 vertical jumps and 2 agility runs during the pre- and post-test data collection sessions. The highest jump of 3 attempts and the lowest time of 2 attempts were used as criterion measures for data analysis. The results of the 2 x 2 analysis of variance (ANOVA) revealed significant differences at the p<.05 level for the main effects of mode and test. Eccentric quadriceps peak torque values were greater than concentric quadriceps peak torque values before and after the 6-week slide board training and pre-season training. Concentric and eccentric quadriceps peak torque means also revealed greater peak force generation in the post-test than in the pre-test. The results of the two 1 x 2 ANOVAs revealed significant differences at the p<.05 level for vertical jump height and agility during tests. The vertical jump height mean increased by 1.2 ins. and the agility time mean decreased by .73 seconds after the 6-week slide board training and pre-season training. In conclusion, the results indicate the potential benefits of using slide board training as a component of a pre-season training program.


The purpose of this study was to determine what effect rapid weight loss and subsequent weight gain had on muscular power of intercollegiate wrestlers. Body weight, total body water, muscular power of arm flexion and extension, and muscular power of leg flexion and extension were studied at three conditions: normal weight, dehydrated wrestling weight and in 6-hour rehydrated weight. Results showed that the subjects (n=10) lost 4.7% (3.3 kg) body weight and 6% body water (2.8 L) prior to the dehydrated test condition. The subjects employed food and fluid deprivation coupled with exercise in a heated wrestling room to lose this weight. Analysis by one-way repeated measures ANOVA revealed that there was a significant difference found for both the body weight and total body water measures ([F(2,18)=26.12, p<.001 and F(2,18)=3.80, p.<.042]]. Using a 3x3 repeated measures ANOVA, power during arm flexion and arm extension was significantly greater at a slow speed compared to intermittent and fast speeds [AF [F(2,17)=6.44, p<.01] and AE [F(2,18) =19.91, p<.01]]. Subjects were able to regain losses of body weight and body water prior to the 6-hour rehydration testing condition by employing individual nutrition patterns which the subjects normally use during the wrestling season. In conclusion, rapid reduction in the body weight of intercollegiate wrestlers through food and
fluid restriction in association with exercise in a heated wrestling room can lead to significant reductions in weight and body water. In addition, upper body power measures at a slow speed are significantly different from power measures for a fast or medium speed.

HEALTH EDUCATION


The purpose of this study was to explore the relationships between elementary classroom teachers’ Level of Use of a new health education curriculum and their perceptions of the curriculum, their views on the content and benefits of health education, and of their perceived roles as health educators. One-hundred and six of one-hundred and ten teachers involved in a program to implement a new comprehensive school health education curriculum in five inner city elementary schools completed questionnaires which measured their Level of Use of the new curriculum. Teachers were ranked in three categories: low users, moderate users, and high users. In an examination of Diffusion of Innovations theory, teachers were also asked about their perceptions of the curriculums complexity (perceived difficulty), relative advantage (whether this curriculum is better than previous health curricula), and observability (perceived ability to observe the effects of the curriculum). Teacher perceptions of the new curriculum were compared for each of the three Level of Use groupings. In addition, twelve high users and eleven low users were interviewed regarding their perceptions of: 1) their role as health educators 2) the connection between health education and the other subjects in the school curriculum and 3) the benefits of health education to children of the inner city. As expected, low users perceived the curriculum as being more complex and having less relative advantage than high users. However, no differences in perceived observability were found between low and high users. Also, amount of training and perceived complexity were the only significant predictors of Level of Use in this data set. High users reported feeling confident and excited about teaching health. They believe the training and materials they have received have made it more appropriate for them to be the main health educator for their children. Low users reported feeling confused about their roles as health educators. The presence of a health education specialist in their school has led these teachers to feel ambivalent about their responsibility to teach health. These results highlight the important role played by a school’s organizational climate in promoting or discouraging the diffusion of innovative health education curricula.


This study investigated factors affecting the successful maintenance of the worksite cardiovascular risk reduction program “Heart at Work”, developed and sponsored by the American Heart Association. Cardiovascular disease is the leading cause of death and disability in the United States. Many prevention-oriented health education programs target cardiovascular disease at the worksite. The “Heart at Work” program was developed to provide employers with a low-cost cardiovascular risk reduction program that utilizes the employer’s own resources with AHA support, tailored to each employer’s needs. Based on a review of the literature and a pilot study by this investigator, twelve variables were identified that were hypothesized to affect success of maintenance of the program: company size; predominant gender of employees; stability of size of workforce; existence of onsite medical department and/or health promotion structure; existence of onsite classroom and/or fitness facility; stability of corporate decision-making structure or management personnel; presence of major labor relations conflicts; company adherence to HAW program protocols; utilization of employee interests in program implementation; status of onsite coordinator; stability of onsite coordinator; and assignment of trained AHA volunteer consultant to the worksite. A retrospective survey was conducted of the first 60 companies to enroll in the “Heart at Work” program in the Greater Philadelphia Metropolitan Area. Preliminary analysis including frequency distributions, correlations, and Chi-Square analysis were utilized to identify the most relevant variables. The relationships of the predictor variables to the criterion variable of successful maintenance of the program over a five-year period were then analyzed using logistical regression. Variables most strongly predictive of successful maintenance included larger company size; presence of onsite classroom and/or fitness facilities; medical status of onsite coordinator; and, stability of assignment of onsite coordinator.

Gagalis, Zisis EFFECTS OF LEG EXERCISE AND INSULIN INJECTION SITES ON BLOOD GLUCOSE IN PERSONS WITH INSULIN DEPENDENT DIABETES MELLITUS (IDDM), 1992. M.S.Ed., Northern Illinois University (James Rimmer). (56pp 1 f $4.00) HE 541

The purpose of this study was to determine the influence of insulin injection sites to the leg, arm, or abdomen prior to leg exercise in blood glucose responses during exercise in individuals with insulin dependent diabetes mellitus (IDDM). Four males and three females with IDDM (X age=20.14 yrs) performed three 18 min submaximal stairclimbing tests at 50% of their predicted VO2 max on a Stairmaster 4000 PT exercise device. Subjects injected 80%
of their usual pre-breakfast dose of insulin (NPH+R) subcutaneously into the thigh, arm, or abdomen, 5 min prior to each exercise bout. Blood samples were collected before insulin injection (fasting baseline) and every 3 min during exercise via the fingerstick method. Blood samples were then analyzed for blood glucose. ANOVA revealed no significant statistical differences between the last blood glucose value and preexercise level induced by the three exercise test conditions (p>0.05), indicating that insulin injection sites had no influence on these values. These results indicated that subcutaneous insulin injection into the leg before leg exercise did not induce a significant drop in blood glucose as compared to subcutaneous insulin injection into the arm or abdomen. However, the study revealed significant clinical differences within and between subjects' blood glucose responses to exercise, suggesting individualized attention to possible risks of hypoglycemia during exercise for these individuals.

Gappmaier, Eduard. MAXIMAL EXERCISE TESTING AND AEROBIC TRAINING IN MULTIPLE SCLEROSIS, 1993. Ph.D., Brigham Young University (Rulon S. Francis). (307pp 4 f $16.00) HE 542

Twenty-seven patients with multiple sclerosis (MS) underwent a series of exercise tests combined with neurofunctional tests before and after a 15-week aerobic training period to investigate the safety and efficacy of maximal exercise testing, submaximal aerobic exercise and exercise training. Maximal exercise testing with combined arm and leg ergometry was found to be a safe and effective evaluation tool to determine maximum aerobic capacity in MS patients with mild to moderate disease severity (EDSS 1.0 to 6.0). Vigorous aerobic exercise for 30 minutes above 60% of aerobic capacity had no significant deleterious effects on neurophysiological function. Aerobic training resulted in a significant increase in maximal aerobic capacity and knee and shoulder extensor strength and in a significant decrease in percent body fat and skinfold thicknesses. Contrary to popular medical opinion, physical exercise with adequate temperature control was not harmful to individuals with MS but resulted in favorable changes in overall fitness.

Hubball, Harry T. THE IMPACT OF AN ADULT HEALTH EDUCATION PROGRAM ON EXERCISE SELF-EFFICACY AND PARTICIPATION IN LEISURE-TIME PHYSICAL ACTIVITY, 1994. M.A., University of British Columbia (Sharon Bleuler). (162pp 2 f $8.00) HE 543

Low participation in and poor adherence to regular exercise presents a major challenge for health promotion programs. A growing body of evidence suggests that health education programs that are developed using the principles of Bandura’s (1986) Self-Efficacy Theory have shown success in maintaining a variety of health related behaviors. Exercise behavior however, is often more time consuming and requires more effort than most other health related behaviors, thus it remains to be seen whether adult health education programs which are intended to develop exercise self-efficacy, will indeed increase participation in, and adherence to regular exercise. After reviewing the available literature, an adult health education program was developed by the researcher that combined the principles from Bandura’s (1986) theoretical model of Self Efficacy, with concepts and intervention strategies drawn from the literature in adult education, health education and exercise psychology. Green and Kreuter’s (1991) Precede-Proceed framework, an outcome-based health education planning model was used for the planning, implementation and evaluation processes of this adult health education program in a community setting. The purpose of this study was to investigate the impact of the intervention program on exercise self-efficacy and the participation in leisure-time physical activity at the end of the five week program and at the end of a five week follow-up period. Thirty nine female residents from U.B.C. Acadia Park family housing were recruited for this study. The subjects were matched and paired and then randomly assigned to either an experimental or control group. Both groups received a five week program of nine, ninety minute sessions. The experimental group received a program that focused on the self-regulation of exercise behavior and the control group received a traditional health education program based on standard health information. It was hypothesized that the experimental group would participate more frequently in exercise, and have higher exercise self-efficacy on completion of the five week program, and at the end of the five week follow-up period. The participation in exercise was measured using the 7-Day Recall Exercise Behavior Questionnaire (Godin and Shephard 1985) and exercise self-efficacy was assessed using the Exercise Self Efficacy Scale (Marcus et al. 1992). The data were analyzed using a two way analysis of variance, group (two) by time (three) factorial design with repeated measures on the second factor for each dependent variable. In addition, Green and Kreuter’s (1991) Precede evaluation framework was used to describe how learning was applied following the intervention program. The quantitative analysis indicated that the experimental group participated in a significantly higher frequency of exercise and had significantly higher levels of exercise self efficacy at the end of the five week program and at the end of the five week follow-up period than the control group (p<0.001). The Precede evaluation revealed that the participants differed in their understanding of the self-regulatory strategies, their adaptation of these strategies, previous experience with exercise motivation, stages and rates of exercise adoption, personal resources and perceived power, social support, and perceived exercise self-efficacy. The hypotheses were supported by the results of this study and suggest that a health education program that is based on Bandura’s
Kennington, Anna. *THE RELATIONSHIP OF ATHLETIC PARTICIPATION AND INACTIVITY TO FATTY FOOD SELECTION IN SENIOR CITIZENS*, 1993. M.S., Brigham Young University (L. McKay Rollins). (69pp 1 f $4.00) HE 544

Eighty senior citizens, age 57 to 92, participated in answering a diet habit survey. Forty (20 men and 20 women) of the subjects were classified as athletic seniors, based upon participation in certain events at the World Senior Games. The other forty (20 men and 20 women) were classified as sedentary seniors based upon their response to an activity questionnaire. With p=.05, an analysis of variance (ANOVA) showed a significant difference between the athletic and sedentary populations in their fat intake (P=.000), but no significant difference between athletic and sedentary females and males, in carbohydrate intake (P=.215).


This study examined the effects of the amount of caffeine consumed on symptoms of premenstrual syndrome. Eighty-six college age female students participated in a study to determine caffeine’s effect on the severity of premenstrual symptoms (PMS) over a 1-month period. From the information obtained from the questionnaire, three caffeine levels were created. The first level contained those students who consumed 0-60 mg of caffeine per week, the second, 61-120 mg, and the third, 121+. Severity of PMS symptoms was determined by the sum score of the graded symptoms per group for the 7-day period before and after menses. Analysis of the data showed that a significant relationship exists between caffeine consumption.

Thomas, Anita C. *PRIMARY AND SECONDARY CARDIOVASCULAR DISEASE RISK FACTORS AND THEIR CORRELATIONS WITH WAIST-TO-HIP RATIO AND BODY MASS INDEX IN NORTH CAROLINA DEPARTMENT OF CORRECTIONS EMPLOYEES*, 1994. M.A., University of North Carolina at Chapel Hill (Barbara E. Ainsworth). (96pp 1 f $4.00) HE 546

This study examined the association between primary and secondary cardiovascular disease (CVD) risk factors and waist-to-hip ratio (WHR) and body mass index (BMI) in 591 employees of the North Carolina Department of Corrections. CVD risk factors measured were blood pressure, total blood cholesterol, leisure time PA, occupational PA, and smoking status. Height, weight, waist and hip circumferences, alcohol use, and education status were recorded. Relationships were adjusted for age, sex, race, alcohol use, and education. Results showed that partial correlations between BMI and WHR and the variables of total cholesterol (r=.105, .131), SBP (r=.273, .214), DBP (r=.319, .246), and body weight (r=.897, .379) were statistically significant (p<.05). Leisure PA was related to WHR (r=-.137) but not BMI (r=-.052). There were no statistically significant differences between the correlation between BMI and WHR and CVD risk factors of choleseterol, SBP, DBP, smoking, occupational PA and leisure PA (t=.09 to 1.86, p>.05).

Underwood, Lisa S. *ASSESSMENT OF THE PLANNING AND IMPLEMENTATION PROCESS OF WORKSITE HEALTH PROMOTION PROGRAMS*, 1994. M.S., Purdue University (Gerald Hyner). (91pp 1 f $4.00) HE 547

The purpose of this study was to assess the process relating to the planning and implementation of worksite health promotion programs. A survey was sent to 250 companies (83%) of the 301 companies listed in the 1988 Association for Fitness in Business Information Directory. Usable responses were obtained from 81 of the Companies (32%). The survey explored the practices companies used when developing, implementing and evaluating their worksite programs. An assessment was made using t-tests and chi-square analyses to determine the steps used in this process and differences between small (27%) and large (73%) companies represented in the sample. This study found no significant differences in any major variables between small and large companies. Both small and large companies reported a similar number (10.8 and 10.7 respectively) and types of programs such as fitness enhancement, nutrition and weight control intervention, and hypertension reduction awareness. The corporate expectations ranged from improving employee health to reducing health care claims. Respondents reported that implementation measures are determined during the planning phase and flexibility was built in to allow for changes and modification in the programs as needed. Companies failed to identify measures of success and were unable to determine when program modifications should be made. Inconsistencies were found with respect to evaluation procedures. The majority of companies (77%) reported using some form of evaluation, however specific measurable objectives were not defined in 59% of the companies at the start the program. Overall, companies seemed to use some form of step-by-step process when planning and implementing their worksite health promotion program. The majority of companies set a budget for the program (59%), set short-term goals (74%), set long-term goals (65%), identified a target population (72%), employee
health committee (79%). Several improvements should be made to enhance the probability of success for worksite health promotion programs. It is recommended that clear and measurable objectives be set, a written plan be proposed, specific times to review and update the program be set, and evaluation measures be established prior to the implementation of health promotion interventions at the worksite.

**RECREATION AND LEISURE**

Castille, Cheryl L. THE PERCEIVED IMPORTANCE OF A LEISURE EDUCATION COMPONENT IN OUTPATIENT WEIGHT MANAGEMENT PROGRAMS SERVING ADULT WOMEN, 1994. M.S., University of Wisconsin-La Crosse (Nancy H. Naver). (94pp 1 f $4.00) RC 478

Previous research has cited the need for new and additional programming for effective long term weight management treatment. This study sought to determine the extent to which health care professionals perceive leisure education as an important component to include in weight management programs serving adult women. 100 health care professionals (physicians, registered dietitians, mental health therapists, exercise physiologists, certified therapeutic recreation specialists) were surveyed regarding important leisure education components to include in weight management programs. Results indicated that all professional groups surveyed believed leisure education was an important component to include. The result of an ANOVA for the components of the leisure education content model were statistically significant for gender. The findings for the other dependent variable, profession, were not significant. The implications of these results for health care providers are discussed.

Kelland, Jill. THE LEVEL OF PROFESSIONALISM AMONG THERAPEUTIC RECREATION PRACTITIONERS IN ALBERTA, CANADA, 1992. M.S., University of Wisconsin-La Crosse (Nancy H. Naver). (198pp 3 f $12.00) RC 479

Hall's (1968) professionalism scale was administered to 223 therapeutic recreation practitioners working in Alberta, Canada. The scale generated an overall professionalism score as well as scores on 5 attitudinal attributes: use of the professional organization as a major reference, sense of calling to the field, belief in self-regulation, belief in service to the public, and sense of autonomy. These scores were cross tabulated with the 4 personnel characteristics: level of education, educational institution, years of experience, and professional membership. It was found that practitioners had a mean professionalism score of 89 out of 125. The attribute with the highest mean was sense of calling to the field. None of the personnel characteristics had a significant relationship with the overall professionalism scores. However, a significant relationship was found between the personnel characteristics of years of experience and a sense of autonomy. The characteristics of professional membership and use of the professional organization as a major reference were also significantly related at the p<.05 level. Several significant relationships were also discovered between the various personnel characteristics. The study also examined the job functions and responsibilities of practitioners in Alberta. Recommendations and conclusions make reference to the success of past professionalization efforts and include suggestions for further development in the field.


The purpose of this study was to examine the interrelationships of paddlers’ specialization levels, motivations and preferences for site attributes, and then how these variables influenced paddlers’ actual site choice behavior. The subjects used in this study consisted of 663 canoeists/kayakers from eleven paddling organizations. Based upon an observed correlation between specialization and gender, the relationships of specialization to motivations and site attributes were examined through analysis of variance while controlling for gender. The results indicated that high specialists differ from low specialists in the rated importance of selected motivations. Change was greater for challenge and competition, intermediate for relaxation and social contact, and least for experiencing nature and curiosity. Similarly, the impact of specialization was strong for the site attributes of safety, difficulty, facilities and new sites, moderate for convenience and social skill, and weak for wilderness. Adjusting for specialization, gender was related to the motivations of experiencing nature, relaxation, and social contact, and the site attributes of social skill and difficulty. Canonical analysis was utilized to inspect the relationships between the combined predictor variables of specialization, gender and motivations and the criterion variables of site attributes. Although there were six dimensions representing the relationships, the first three dimensions accounted for the majority of the variance. The first dimension suggested that those with higher specialization level and challenge motive attached greater importance to the site difficulty attributes. The second dimension showed that those with higher experiencing nature and curiosity motives would prefer the wilderness and new sites attributes. The third dimension suggested that the females and lower specialists with stronger social contact motives were more likely to seek facility, social skill, and safety site attributes.
This study developed a specialization index with four dimensions (participation, skill, equipment, and centrality to lifestyle) and identified constraints to the levels of enjoyment and participation of trout anglers within four levels of a specialization typology. Although the relationship between angler specialization and constraints to trout fishing has not been previously studied, the results of this study largely supported findings presented in a number of angler specialization and satisfaction studies. Data were collected through a mail survey with a sample drawn from members of Trout Unlimited and Pennsylvania fishing licenses. An overall response rate of 68% percent was obtained. The findings of this study showed that constraints to the levels of participation and enjoyment of trout anglers were related to levels of specialization. As anglers became more specialized factors such as lack of accessibility due to no trespassing regulations and the catching of stocked trout intensified. Lower specialized anglers were more constrained by factors such as boredom, creel limits being too strict, and a perceived lack of trout. Also analyzed against the specialization index were a number of constraint variables that could result in angler displacement. Displacement refers to constraints that might cause anglers to permanently abandon a preferred fishing area. The study indicated that difficulty getting to a fishing area due to a lack of facilities, such as boat ramps, footpaths and roads was more likely to cause displacement among lower specialized anglers. No respect for privacy and a lack of access to areas due to no trespassing regulations were factors more constraining to highly specialized anglers. This study assists fishery managers in further understanding the diversity of Pennsylvania’s trout anglers and the factors that interfere with their desired levels of participation and enjoyment. Constraints that concerned trout anglers, regardless of specialization level, are also presented.


This study investigated the perceptions of residents of Monroe County on the impact of tourism in Monroe County, Pennsylvania. Attitudes toward tourism were measured along economic, sociocultural, and ecological scales and compared across a variety of sociodemographic variables. The relationship between perception of tourism impact and level of attachment were also measured. Furthermore, the factor structure of the instrument was assessed. Analysis of variance, correlation coefficients, and factor analysis were the statistical tests employed. Data was collected by use of a mailed questionnaire. A 43% overall response rate was obtained. The findings of this study indicated that perceptions of tourism impact were effected by educational level and length of residence. There were no significant effects of gender, age, marital status, or income. Correlation coefficients were measured between each of the scale scores and level of attachment. For each scale there was a moderately low positive correlation between attachment and the scale score. On the basis of eigenvalues and interpretability of results, factor analysis identified six structural dimensions of items on the questionnaire. Negative socio-ecological impact, positive economic effect, positive cultural-educational impact, infrastructure, negative financial consequences, and courtesy to tourists were the structural dimensions identified.
The purpose of this study was to examine individuals' preferences regarding management techniques for outdoor recreation areas. In addition, the study investigated the effects of particular variables thought to influence visitor preferences for management techniques. This study was administered by a mail survey. A questionnaire was designed to be used in this study. A total of 339 boaters were identified from a list of boaters' names and addresses compiled during the 1992 boating season by the Bald Eagle State Park administration. Questionnaires were mailed to the individuals in two waves, with a postcard reminder between the two waves. A total of 217 usable questionnaires were returned (64.0 percent of the total 339 samples). The preprogrammed library package, SPSS-X (Statistical Package for the Social Sciences) was utilized to process the research data. The statistics employed to analyze the data and test the research hypotheses included descriptive statistics, Cronbach Alpha Coefficient, Paired T-test, One way Analysis of Variance, and Regression. Based upon the findings of this study, boaters preferred indirect management strategies more than direct management strategies. Overall, the findings of the study indicate that: (1) past experiences, (2) perceived site problems, and (3) visitor characteristics variables had significant influence on the preferences for management strategies. The perceived site problems group had more variables significantly influencing the management preferences of boaters. Furthermore, visitor characteristics variables identified in this research have limited influence on the management preferences of boaters. The variables which were found to have significant effects on management preferences in this group were the boaters' age, income, education background and opinion toward recommended minimum age for power boat operators. The findings of this study support the notion that boaters' management preference are affected by their past experiences, perceived site problems, and personal characteristics. This result could help managers to identify the determinants of preferences when determining management strategies.

A leisure activity visitation training program (LAVTR Program) was developed in order to identify the effects of the visitors' perceived satisfaction of the visits with the residents with dementia related diseases including Alzheimer's disease (DRD-AD). Participants (N=11) voluntarily participated in the 3 hr training program. The visits of the participants were studied for 4 wk periods prior to and directly after the training program. Through the data collected from the Visitor Questionnaire Forms, the participant evaluation forms, and the Miller Social Intimacy Scale, the study was based on a collection of single subject designs. Several findings support that a change in the visitors’ knowledge and use of leisure activities occurred during visits after participation in the LAVTR program. The percentage of visits that were identified as “a lot” of satisfaction increased after the training: 67% pretraining (10 of 15) and 75% (12 of 16) posttraining. After the training, 8 of the 11 participants used new leisure activities during visits that were not used prior to the training.

**PSYCHOLOGY**

**ANXIETY**


The purpose of this study was to determine the effects of the paradoxical intervention of symptom prescription on the competitive state anxiety levels and performance of young competitive swimmers. Subjects (N=58), from a Young Mens Christian Association (YMCA) swim program, were randomly assigned to one of three groups: (a) Paradoxical Treatment (n=21), (b) Relaxation Treatment (n=20), or (c) Control (n=17). The testing procedure consisted of pre- and post-treatment administration of the Competitive State Anxiety Inventory-2 (CSAI-2); and collection of swim performance scores. The Paradoxical Treatment Group received the intervention of symptom prescription. The Relaxation Treatment Group received training in progressive relaxation. The Control Group received only oral and written information about competitive anxiety. As a baseline measure, performance scores and results from the CSAI-2 were obtained at a swim meet. Subsequently, each subject met individually with a researcher for three sessions. The first session was training and practice for the treatment groups. The Control Group received information and no intervention training. Sessions 2 and 3 were brief follow-up meetings. Performance scores and results of the CSAI-2 were obtained at a post-treatment
A separate multivariate analysis of variance was conducted for each fitness test to detect if attitude or knowledge differences existed within main effects groups of fitness standard achievement and nonachievement, males and females, or 6th and 8th grade. No significant interactions were present; however, all main effects were found to have differences (p<.05). Follow-up discriminant analyses results indicated that students in the mile standard achievement group can be classified as those who score higher in fitness knowledge and ‘Health and Fitness’ as both valuable and enjoyable. Sit-up test achievers scored higher in fitness knowledge and ‘Social Growth’. Males and females are best differentiated by ‘Aesthetic’, ‘Vertigo’, and ‘Ascetic’ dispositions. Sixth grade students tend to score lower in fitness knowledge but higher in ‘Social Growth’, ‘Health and Fitness: Enjoyment’ and ‘Aesthetic.’ In general, 8th grade or nonachievement groups tend to have less positive attitudes toward physical activity than 6th grade or achievement groups, respectively.

**ATTINUTION**


The purpose of this investigation was to document the existence and study the globalness of the learned-helpless phenomenon among sixth graders. Students were identified as learned helpless or mastery oriented based on their scores on a modified form of the Intellectual Achievement Responsibility (IAR) Scale (Crandall, Katkovsky, Crandall, 1965) and ratings from their math, physical education, and reading teachers. A total of 23 students were identified and included in the study from a populations of 197. This sample included 11 students classified as learned helpless (7 male and 4 female) and 12 students classified as mastery oriented (7 male and 5 female). Chi-square analyses and resulting gamma coefficients revealed significant differences in the task persistence and causal attributions of these two groups. Specifically, learned-helpless students exhibited a lower percentage of on-task behaviors in each subject and when all subjects were considered together when compared to their mastery-oriented counterparts. The only significant difference between these two groups with respect to task difficulty appeared with the learned-helpless students in physical education. This difference was not in the direction anticipated, however. That is, learned-helpless students in physical education actually were on-task more with harder learning tasks. Mastery-oriented students actually persisted less with more difficult tasks. These differences were not statistically significant.
but are particularly interesting. Significant attributional differences appeared between these two groups of students in math and when all subjects were considered together, particularly in failure situations. More specifically, learned-helpless students viewed failure as being out of their control approximately one-half of the time. Mastery-oriented students, in contrast, viewed their failure as being a result of insufficient effort approximately 75% of the time and, as a result, within their control.

**BEHAVIOR ANALYSIS**

Chroni, Stiliani. INCENTIVE MOTIVATION, COMPETITIVE ORIENTATION AND GENDER IN COLLEGIATE ALPINE SKIERS, 1994. M.S., Springfield College (Mimi Murray). (139pp 2 f $8.00) PSY 1768

Gender differences in incentive motivation and competitive orientation, and any relationships between the incentive motivation subscales and the competitive orientation scores, were tested for Division I alpine skiers. Alpine skiers were compared on the seven incentive motives of the Alberta Incentive Motivation Inventory (IMI) (Wood, 1980) and on the three Competitive Orientation Inventory (COI) scores. MANOVA was used to analyze the differences of the seven IMI subscales and the two COI scores. Non-significant (p>.05) differences were found among males and females on the IMI subscales. Discriminate function analysis showed two significant differences (p<.05) as females valued ‘excellence’ higher than males, and males valued ‘aggression’ higher than females. Non-significant (p>.05) differences emerged for the ‘performance- and outcome-oriented’ COI scores. An independent groups t ratio determined non-significant (p>.05) gender differences on the composite competitive orientation score. From the Pearson product-moment correlation coefficients, 17 non-significant (p>.05) and 4 significant (p<.05) relationships were found among the seven IMI subscale scores and the three COI scores.


The purpose of this study was to determine whether the relationship between hostility and risk factors for heart disease differed between Native Americans and Caucasians. In addition, differences in blood pressure, body composition, physical activity, alcohol intake, and incidence of diabetes and cigarette smoking were examined. Subjects were age and sex matched males (n=36) and females (n=14) who attended a New England PowWow. All subjects completed the Cook-Medley Hostility Scale. Correlations between hostility and selected risk factors were similar in both samples. Hostility was significantly (p<.01) related to self-reported physical activity for both the Native American (r=-.21) and Caucasian samples (r=-.17). No other significant (p>.05) correlations were found between hostility and selected risk factors. Two-way ANOVAS (race x sex) were used to test differences between groups. Native Americans generally exhibited a poorer coronary heart disease risk profile than Caucasians. Systolic blood pressure and body mass index were both higher (p<.01) in the Native American group. Physical activity levels were lower (p<.01) for Native American males than for Caucasian males. Diastolic blood pressure and alcohol consumption tended to be higher (p<.07) for the Native Americans. No significant differences were found between the two groups regarding the number of smokers, diabetics, and alcohol drinkers. The present preliminary investigation of the health status of East Coast Native Americans suggests the need for a large scale study on this population.


The purpose of this study was to examine predictors of general responsible environmental behavior, representing pro-environmental action on a general level and specific responsible environmental behavior, representing the percentage of raw boaters discharged from recreational vessels in a sanitation pumpout facility in the Chesapeake Bay region, Maryland. A conceptual framework of responsible environmental behavior, adapted from prior research, was used as a guide for this investigation. Also, the investigator examined situational factors that influence or hinder specific responsible environmental behavior. Nineteen independent variables categorized as sociodemographic variables, boating background variables, general environmental variables, specific issue variables, and situational factors comprised those indicators hypothesized to predict behavior. Data for the study were collected during the fall of 1992 through mail surveys sent to a stratified random sample of owners of vessels 22 feet or larger in Maryland. The instrument included a number of measures drawn from prior studies of environmental and boating behavior. Several indices were created to verbal commitment, environmental concern, knowledge of water pollution issues, awareness of the consequences of behavior, personal commitment, situational factors, and general responsible environmental behavior. Questions related to awareness of the consequences of water pollution and knowledge of laws about discharging human waste at sea were developed specifically for this study. With nine refusals and 29 surveys returned because of an insufficient address, the total sample was reduced to 713. A
total of 291 surveys were returned, representing a 41 percent response rate. Another 61 respondents did not meet criteria necessary for analysis in this study and were eliminated from the sample. Phone interviews were made to a random sample of nonrespondents (N=30) to address the issue of nonresponse bias. Results from a multiple regression analysis show two general environmental variables collectively explained 21.8 percent of the total variance in boater general responsible environmental behavior. Verbal commitment was the strongest predictor followed by knowledge of ecology. Environmental concern was moderately correlated with general responsible environmental behavior but did not contribute significantly to the regression model. When the sociodemographic variables were added to the regression model, stand on political issues added another .5 percent to the total variance explained. Further multiple regression analyses found eight predictors of specific responsible environmental behavior (% of waste pumped in a pumpout station) combined to explain 46 percent of the total variance. Surprisingly, three background variables (education, boat length, and years of boating experience) were found to be predictors of specific behavior. Environmental concern, representing the pool of general environmental variables was a moderate predictor. As expected, the specific issue category of variables contributed most to the variance explained ($R^2=.262$) in the percentage of waste pumped in a pumpout station. These specific issue indicators included knowledge of water pollution issues, knowledge of the law about dumping on the bay, knowledge of the law about dumping at sea, and awareness of the consequences of raw sewage on water quality. This study showed that representative indicators of the cognitive, affective and conative components of an attitude construct were predictors of a specific behavior. Implications suggest that relationships between various indicators of the three attitudinal components provide a better understanding of behavior than single component behavior examinations. Findings imply that knowledge predicts behavior in both general and specific issue situations. In addition, the more specific the indicator of behavior, the better predictive ability that indicator will have on behavior.

Cramer-Hamman, Buffy. PREDICTING SUCCESSFUL ADJUSTMENT TO DISENGAGEMENT FROM COLLEGIATE ATHLETICS, 1994. M.A., University of North Carolina at Chapel Hill (John M. Silva). (85pp 1 f $4.00) PSY 1772

The purpose of this study was to examine pre-retirement planning and decision-making, identity, social support, and the nature of disengagement (voluntary/involuntary) in student-athletes who have completed collegiate eligibility. Twenty-three male and female Atlantic Coast Conference student-athletes, terminating eligibility in varsity athletics, completed a series of questionnaires. All subjects were tested during the last semester of their senior year. Statistical analysis included descriptive data on all variables and MaxR, Simple, and Multiple Regression Analyses to determine the amount of variance in successful adjustment to leaving sport that can be accounted for by the predictor variables identified. The results indicated that the best model for predicting successful adjustment includes social support and career planning $F(2,20)=19.14, p=.0001$, $R^2=.6569%$. The small sample size lends to suspect results, however, the factors, athletic identity, social support, career planning, decision making and nature of disengagement need to be examined using a larger sample size and to be addressed with student-athletes prior to disengaging from collegiate athletics.

Flint, Matthew O. THE INFLUENCE OF HEALTH BEHAVIOR CONTRACTING ON INTERNAL LOCUS OF CONTROL, 1993. M.S., Brigham Young University (Brent Hafen). (60pp 1 f $4.00) PSY 1773

This study compared internal locus of control in college age students after signing a health behavior contract and college age students in a control group. The health behavior contract was a written agreement between the subject and the researcher and included a health behavior to change the subject’s signature, and the frequency at which the change was to take place. The subjects were encouraged to look at any change with a positive attitude. For example, instead of saying, “I am not going to eat sweets so much,” they could say, “I am going to eat more fruits and vegetables in place of sweets.” The study found that the health behavior contract used was ineffective in increasing an individual’s internal locus of control of health behaviors.


Recently, Polivy (1992) expressed the need for experimental studies addressing risk factors responsible for unhealthy eating and exercise behaviors. The purpose of the present study was to experimentally manipulate the relationship between exercise and eating behavior to examine if cognitions related to future exercise behavior are associated with caloric indulgence. The psychological set of eaters defined as restrained is theorized to motivate eating when natural physiological hunger cues are controlled, thereby justifying dietary consumption (Herman & Mack, 1975). Therefore, it was of specific interest in this study to examine whether plans for future exercise would lead to increased caloric consumption or
“disinhibition” of dietary restraint. In addition, perceptions of control and resultant affect (anxiety and depression) were examined, as these factors have been found to be associated with dysfunctional eating and exercise behavior (Carmack & Martens, 1979; Crossman, et al., 1987; Crowther, et al., 1984; Giles et al., 1985; Gregory, 1981; Hawkins & Clement, 1980; Herman & Polivy, 1975; Morris et al., 1990). The ice cream consumption of female (n=60) college undergraduates, defined as restrained eaters (Herman & Mack, 1975) who evidenced a high commitment to physical activity (Corbin et al., 1987), following assignment to either an exercise (n=40) or no exercise (n=20) group was examined. Temporal changes in perceived control and resultant affect (anxiety, depression) were assessed throughout the experimental manipulation. Of particular interest was examination of these measures related to the removal of plans for future exercise. Therefore, perceived control and resultant affect were assessed in a the group, expected exercise (n=20), that was formed for by following ice cream consumption and was composed of half of the original exercise group. A one-way ANOVA exploring ice cream consumption by group revealed that women with plans for future exercise did not disinhibit (eat more) than women without plans for future exercise. Furthermore, a 3 X 4 (Group X Time) MANOVA with planned univariate contrasts revealed a time main effect for anxiety, with all groups evidencing greater cognitive and somatic anxiety at the beginning of the experimental manipulation compared to the end. Analysis of the thematic frequency of thoughts revealed that the expected exercise group exhibited slight trends in increased control throughout the course of the investigation, as well as decreased positive affect upon being informed that they would be unable to participate in future exercise. Suggestions for future research exploring the relationship between eating and exercise behavior are discussed.


This study involved the development and initial psychometric validation of the Carolina Sport Confidence Inventory (CSCI), a 20 item questionnaire designed to evaluate an individual’s dispositional optimism, perceived control, and sport competence in order to provide a more accurate assessment of sport confidence. Exploratory principal factor analysis on 293 university students yielded two interpretable factors representing dispositional optimism, and sport competence, accounting for 19% and 28% of the variance, with an inter factor correlation coefficient of .67. Principal component analysis revealed that this two factor solution accounted for 61% of the total variance. Cronbach’s coefficient alphas ranged from a high of .92 for the total scale and the sport competence factor and .86 for the optimism factor. Concurrent validity of the CSCI was supported by significant correlations with Vealey’s (1986) TSCI, r=.77, p=.001, and the self-confidence sub component of the CSAI-2 r=.60, p=.001. Test-rest reliability involved 112 participants selected from the original sample. An intraclass correlation coefficient of .94 for the two factor model of sport confidence supports the test-retest reliability of the CSCI. The final model of the CSCI shows promise as a valid and reliable instrument for assessing sport confidence.

Neu, Lois. AN INVESTIGATION OF ATHLETE SATISFACTION WITH THE SPORT TEAM SELECTION PROCESS, 1993. M.A., University of British Columbia (Sharon Bleuler). (117pp 2 f $8.00) PSY 1786

Athletes frequently express concerns regarding the team selection process. Previously, few studies in the Sport Psychology literature have addressed variables associated with the team selection process, and specifically, there is no theoretical framework which identifies the relationship between athlete satisfaction and the team selection process. The current research investigates several variables (task type, team size, criteria, selection method, perceived control, self-esteem, motivation, performance, life satisfaction, age and gender of the athlete, and preferred decision-making style of the leader) which may influence athlete satisfaction with the team selection process. Investigating the team selection process might provide information for the improvement of current selection procedures, and such changes may result in a greater amount of athlete satisfaction with the sport team selection process, as well as, satisfaction with sport in general. Male and female athlete volunteers (208) who had experienced a British Columbia provincial team selection process within the last two years, completed the Causal Dimension Scale, Rotter’s Internal-External Locus of Control Scale, Rosenberg’s Self-Esteem Scale, the Sport Orientation Questionnaire, and a demographic questionnaire (The Personal Information Questionnaire). Automatic Interaction Detection (AID) analysis was used to analyze the data. The variables of performance outcome, motivation, perceived control, self esteem, knowledge of criteria, decision making style, perception of performance, and age, influenced athlete satisfaction with the team selection process. Performance outcome accounted for 17.5% of the total variance found in an athlete’s satisfaction with the selection process. Athletes selected to the team were more satisfied than those who were not selected. Surprisingly, performance outcome affected male satisfaction more than female satisfaction, selection method affected female satisfaction but not male satisfaction, and locus of control affected male satisfaction but not female satisfaction. Furthermore, performance satisfaction influenced female satisfaction with the sport team selection process, but did not affect male satisfaction, and self-esteem affected male satisfaction more than female satisfaction. Results sug-
This study examined the effects of subliminal relaxation affirmations on physical relaxation. Thirty-nine college age students participated in a study to determine the effectiveness of subliminal relaxation affirmations over a 5-week period. Nineteen students listened to ocean wave sounds masking the subliminal relaxation affirmations. Twenty students listened to ocean wave sounds with no subliminally masked relaxation affirmations. The students listened to their respective tapes 30 minutes each day. Relaxation was measured using biofeedback machines measuring finger temperature and EMG. Analysis of the data showed no significant difference between the two groups at the end of the 5 weeks.

Schoen, Christopher H. COMPETITIVE ORIENTATION OF BASKETBALL STARTERS AND NONSTARTERS ACROSS DIFFERENT PLAYING LEVELS, 1993. M.S., Springfield College (Mimi Murray). (104pp 2 f $8.00) PSY 1790

This study was conducted to identify the competitive orientation of basketball starters and nonstarters from various age levels. Using, the Competitive Orientation Inventory (COI) developed by Vealey (1986), subjects (N=131) were asked to evaluate hypothetical competitive situations involving various performance levels and contest outcomes. The subjects, from college high school and junior high school basketball programs, were distinguished by their coach on the basis of playing status. According to the coaches' ratings the top six players were determined to be the starters while the remaining players were identified as the nonstarters. Using a 2 x 3 (Player Status x Playing Level) two way factorial analysis (ANOVA) of the COI scores a significant (p<.05) interaction failed to appear. There were no significant (p>.05) differences in mean competitive orientation scores between starters and nonstarters at any playing level. However, a significant (p<.05) main effect occurred for status with nonstarters achieving a higher mean competitive orientation score than starters. The expected outcome of starters exhibiting higher mean scores, and college players having the highest mean scores followed by high school players and then junior high school players, never materialized. The significant finding of the main effect, indicating higher mean scores for nonstarters, suggests factors are present that warrant further study. The nonsignificant finding concerning playing level differences also demands further review and replication, with the suggestion of studies conducted at various times in a team’s season and testing teams of different sports.


This investigation was conducted to determine the psychophysiological effect of television viewing on self-selected exercise intensities. Healthy, female, regular exercisers (n=12), mean age=27.17±9.11 and mean weight=57.58±8.45 kg, were tested under two counterbalanced conditions: exercising at preferred intensity with television (TV) and with no television (NTV). Mean heart rate (HR), rating of perceived exertion (RPE), and feeling scale scores (FS) were not significantly different (p>.05) between TV and NTV. Mean preferred intensity of exertion (PIE) was significantly higher (p<.05) when exercising with NTV than with TV. This mean difference in PIE of 23 kpm/min over 30 min equated to 6 kcal or a 5% increase in energy expenditure when exercise was performed with NTV. In conclusion, TV was found to be an external stimulus that is used as a dissociative technique to decrease levels of self-selected exercise intensity. The physiological impact of TV watching during exercise is suggested to be driven in part by a rise in sympathetic activity, which increased HR to similar values as those found with a higher PIE during the NTV condition.

**MOTIVATION**


Achievement motivation theory explains why individuals choose to participate, try hard, and persist in physical activity. The majority of achievement motivation research within sport psychology has focused on dispositional differences; while failing to address the influence of the social context (e.g., Ames, 1984; Nicholls, 1989). A particular area of neglect involves cultural differences in motivation. The purpose of this study was to examine the nature of both individual differences (i.e., task and ego goal orientations) and social contextual factors (i.e., goal/reward structures, cultural perspective) related to achieve-
ment motivation among Anglo-American and Hawaiian male weight-training participants. A qualitative methodology consisted of interviews of Anglo-Americans socialized in the mainland United States (n=5), Hawaiians (n=5), and Anglo-Americans socialized in Hawaii (n=5). The interview was designed to solicit respondents’ definitions of positive and negative experiences in physical activity and weight training, and their perceptions of the environment of the weight room. The data were analyzed through separate inductive content analyses for Anglo-American and Hawaiian groups. Results revealed both similarities and differences among the cultural perspectives. Anglo-American and Hawaiian participants defined positive and negative experiences in physical activity and weight training similarly through task and ego goal orientations, and an interdependent perspective of the self. In addition, these respondents perceived the weight-room climate based on individualistic, competitive, and cooperative goal/reward structures. Cross-cultural differences were predominantly identified in the Hawaiian group. In addition to task, ego, and interdependent goals, this group also defined positive experiences as the demonstration of pride within an in-group. Hawaiian participants also perceived the environment of the weight room through an interdependent perspective and the expression of in-group pride. Interdependence-based perceptions of the weight-room climate were also identified by the Anglo-American (Hawaii) group. In conclusion, cross-cultural similarities and differences regarding the nature of goal orientations and the social context of a physical-activity setting were identified. Such findings highlighted the necessity for conducting future sport psychology research involving alternative cultural perspectives in order to capture the true essence of achievement motivation.


The purpose of this study was to examine motivational differences of four types of aquatic professionals (Aquatic Directors, Swim Coach/Aquatic Directors—Professional, Swim Coach/Aquatic Directors—Seasonal, and Swimming Coaches) as measured by a modified version of the Neal-Priest Inventory for Motivational Congruency/Discrepancy. Years of professional experience and gender were also used to explore differences in the motivators among the four groups. A total of 166 aquatic professionals returned the completed instrument. A total of 21 motive stems were rated (on a scale of 1 to 5) and ranked (1 to 21) by the respondents. The Kruskal Wallis analysis of variance was used to compare ratings and rankings by the groups of aquatic professionals and the groups based on years of professional experience and gender. The Kendall coefficient of concordance and Spearman rank correlation coefficient were used to determine overall rank correlations. Using all groups of aquatic professionals, the top rated and ranked motivators were desire to help your organization/ team attain its goal, sense of personal achievement, and helping others. Aquatic Directors differed from the other three groups in two areas: rating and ranking the opportunity to exercise personal skills and talents and the responsibility of job as important items. All groups rated opportunity for new status and privileges, and develop skills needed for future employment as least important. Of the four stated null hypotheses which compared the ratings and rankings by the four groups of aquatic professionals, the four groups based on years of professional experience, the four groups based on gender, and the overall rankings by the four groups of aquatic professionals, none were rejected. The study supported Herzberg’s motivation/hygience theory in that the top rated items were representative of motivators under the framework of the theory.

Tally, Elizabeth. THE EFFECTS OF REWARDS ON INTRINSIC MOTIVATIONS OF EXERCISERS AND NONEXERCISERS, 1993. M.S., University of Wisconsin-La Crosse (Lisa A. Chase). (60pp $4.00) PSY 1794

This study investigated the effects of rewards on the intrinsic motivation of exercisers (E) and nonexercisers (NE). Furthermore, this study investigated the effects of fitness testing on the intrinsic motivation of E and NE. 73 female volunteers completed 2 fitness tests and the Intrinsic Motivation Inventory (IMI). The IMI is an instrument that divides intrinsic motivation into 4 subscales; interest-enjoyment (IE), perceived competence (PC), effort-importance (EI), and pressure-tension (PT). The subjects were classified as E and NE and subsequently randomly divided into reward and no reward groups. A 2 (E, NE) X 2 (reward, no reward) ANOVA revealed that there was no significant difference between the reward and no reward groups on any subscale (F=.53; p≥.05). However, there was a significant difference between the E and NE on 3 (IE, PC, and PT) of the 4 subscales (F= 23.72; p≤.001). No interaction effect was revealed for the E and reward groups. These data point to the fact the E and NE are intrinsically motivated differently. Because perceived competence can effect intrinsic motivation, education and familiarity may be important factors when using fitness tests to motivate NE.

MOTOR LEARNING AND CONTROL

Hendrickson, William R. THE EFFECTS OF RECOVERY TIME ON THROWING VELOCITY AND ACCURACY OF COLLEGE BASEBALL PITCHERS, 1993. M.S., Brigham Young University (L. Jay Silvester). (81pp $4.00) PSY 1779
This study was designed to measure the effects of three recovery times on the throwing velocity and accuracy of 15 male intercollegiate pitchers (177.4±3.2 cm; 86.4±7.1 kg; 21.4±1.1 yrs). Each subject was asked to pitch three simulated baseball games consisting of 6 innings with 15 pitches per inning. Recovery periods of 12-15 s (SR), 22-25 s (IR), and 32-35 s (LR) were randomly assigned to the game order. The velocity of 60 fastballs was measured by a JUGS speed gun and the accuracy of all pitches was determined by a backscreen target with scores ranging from 4 for a bullseye to 0 for a wild pitch. There was a significant difference in the mean velocity for each recovery time (F=3.15, p=.0430) at the p<0.05 level. Results indicated a significant decrease in velocity during the course of the game for the three recovery times (4% SR; 4.3% IR; 3.4% LR). A significant difference in mean accuracy scores was found for each recovery (F=11.35, p=.0001). For each inning, accuracy scores were higher for LR than for either IR or SR. The mean accuracy score for IR was 3.5% higher than SR and the mean accuracy score for LR was 3.2% higher than IR. This study indicates that pitching accuracy is affected by recovery time or pace between pitches. The longer the recovery time, the greater the pitching accuracy.

Roncsvalles, Maria N.C. THE DEVELOPMENT OF WEIGHTBEARING SKILLS: A LONGITUDINAL STUDY OF INFANTS FOUR TO SEVEN MONTHS OF AGE, 1993. M.S., University of Oregon (Jody L. Jensen). (179pp 2 f $8.00) PSY 1789

A necessary condition to acquire support and locomotor skills is the ability to produce task-appropriate muscular force and adapt joint stiffness. The purpose of this study was to describe the transition in adaptive leg movements as infants first experience and explore weightbearing. Kinematic and electromyographic (EMG) data were collected on spontaneous movements of three infants from 4 to 7 months of age while supported in a bipedal upright posture. Maximum joint velocity (Vp), joint displacement (d) and their ratio (Vp/d relationship) during separate periods of flexion and extension were calculated to estimate the spring like behavior of the system. With a significant correlation found between Vp and d at all ages, the infants appear to exploit the spring-like characteristics of the limbs. No significant differences were found when flexion and extension slopes were compared. However, across time, a parallel increase in steepness for both flexion and extension regression lines was observed for every infant. The flexion slope increase suggests greater compliance with gravity and release of stiffness at the knees. Extension slope increase implicates the generation of larger spring forces enabling more energetic extensions. Earlier quadriceps activity relative to the attainment of peak force along with EMG patterns exhibiting preparatory responses within a bounce cycle imply an increasing ability to modulate the knee joint. The combined results from kinematic and EMG analyses indicate the emerging capabilities for stiffness modulation and/or regulation of energy inputs to the lower extremities.

Sveistrup, Heidi. CONTRIBUTIONS OF THE VISUAL AND SOMATOSENSORY PERCEPTUAL SYSTEMS TO THE DEVELOPMENT OF POSTURAL CONTROL IN INFANTS, 1993. Ph.D., University of Oregon (Marjorie H. Woolacott). (165pp 2 f $8.00) PSY 1793

The purpose of this series of studies was to investigate the development of the automatic postural response (APR) in infants. The first study characterized the longitudinal development of the APR in infants as they gained the ability to walk independently. The second study explored the effect of a perturbation to the visual system in subjects from 5 months to 28 years of age. Finally, the third study investigated the effects of training/experience in infants who were unable to stand independently. There was a progression observed in the development of the APR following a platform perturbation in infants with certain components affected by task experience. Specifically, the probability of activation of all agonist muscles increased. There was also a temporal reorganization of the muscles activated toward a distal-to-proximal sequence. In addition, there was an increase in the number of muscles incorporated into the postural response with a shift from a one muscle to a three muscle pattern. Similar results were observed following training where the probability of activation of four postural muscles increased and a reorganization of the temporal sequencing of the postural response was observed. There was no change in onset latency following the training paradigm. Thus, specific components emerged with development but their emergence was facilitated with training. The effect of a perturbation to the visual system also changed with development indicating that at different stages during development the ability to resolve conflict between sensory systems emerges. Specifically, younger infants sway more frequently and with greater magnitude. The probability and the magnitude of sway recorded decreased with age. This corresponded to a reorganization of the APR recorded over the age range with the probability of activating postural muscles first increasing in the younger subjects as they gained significant experience with independent walking and then decreasing beginning with 4- to 6-year-olds.

SELF CONCEPT

Antshel, Kevin M. THE EFFECT OF TIME OF SEASON ON THE ATHLETIC IDENTITY IN COLLEGIATE SWIMMERS, 1994. M.A., University of North Carolina at Chapel Hill (Charles J. Hardy). (175pp 2 f $8.00) PSY 1763
The present study attempted to examine the effect of time of season on the athletic identity in collegiate swimmers. Fifty collegiate swimmers (females=28, males=22) were tested four times over the course of a competitive season (preseason, mid-season, championship season, and post-season) on the Athletic Identity Measurement Scale and the Sport Identity Index. ANOVA's revealed statistically significant differences over the course of a season on the athletic identity. The swimmers appeared to identify more with the athletic identity in the championship and post season times of testing. On the moderator variables, males were significantly higher on the athletic identity than were females. Low and Moderate skill level student-athletes were higher on the athletic identity than were the High skill level athletes. Low and Moderate experience level student-athletes were higher on the athletic identity than were the High experience level student-athletes. Freshmen and Seniors were higher on the athletic identity than were the Sophomores and Juniors. Discussion of the results focuses upon comparisons with previous research in the area of identity and recommendations for future research were made.

Boge, Justin. PHYSICAL SELF-ESTEEM ACROSS FOUR PHASES OF A CARDIAC REHABILITATION PROGRAM, 1993. M.S., University of Wisconsin-La Crosse (Lisa A. Chase). (60pp 1 f $4.00) PSY 1765

The purpose of this study was to investigate physical self esteem across the four phases of cardiac rehabilitation. A total of 32 subjects between the ages of 55-75 (M=22, F=10), 2 in Phase I, 7 in Phase II, 4 in Phase III, and 19 in Phase IV volunteered for this study. The Perceived Self Perception Profile-Adults (PSPP-A), and the Perceived Importance Profile (PIP) instruments were administered to all subjects. The mean and standard deviation of the subjects were indicative of a mature cardiac rehabilitation population. A one-way analysis of variance (ANOVA) performed on the data indicated that there were no significant differences between phases for each subdomain for both the PSPP-A and the associated PIP (p>.05). However the Appearance subscale on the PSPP-A approached significance (p=.07). Additionally, the Functional Capacity subscale in the PIP approached significance (p=.09). Future investigations incorporating expansions and modifications to the current investigation are suggested to accurately access physical self-esteem in cardiac rehabilitation programs.

Chung, Pak K. SELF-ESTEEM AND HEALTH RELATED PHYSICAL FITNESS OF MALE COLLEGE STUDENTS IN HONG KONG, 1993. D.P.E., Springfield College (Mimi Murray). (180pp 2 f $8.00) PSY 1769

The relationship between health-related physical fitness and self-esteem was tested with 174 male students (aged 19-24) enrolled at the Hong Kong Baptist College in the required physical activity program. The Rosenberg Self-Esteem Scale (Rosenberg, 1965) and the following health-related physical fitness indices were assessed: cardiorespiratory endurance, body composition, muscular strength, muscular endurance, and flexibility. Pearson product-moment correlations were computed to determine the relationship between the physical fitness indices and measures of self-esteem. Data were analyzed with a stepwise multiple regression using the fitness indices as independent variables to predict self-esteem. A significant (p<.05) correlation coefficient was found between self-esteem and cardiorespiratory endurance (r=.35). The stepwise regression analysis revealed that cardiorespiratory endurance was the significant (p<.05) predictor of self-esteem. Cardiorespiratory endurance accounted for 12% of the variance in self-esteem. However, there were no significant correlations between self-esteem and the other fitness parameters in this study.

Lucas, Jason. THE EFFECTS OF A STRENGTH TRAINING PROGRAM ON THE BODY IMAGE, SELF-CONCEPT, AND DYNAMIC STRENGTH OF SEVENTH GRADE GIRLS, 1994. M.S., Brigham Young University (Philip E. Allsen). (78pp 1 f $4.00) PSY 1782

Strength training has been shown to give positive results to both male and female adults with regard to body image and self-concept. This study focused on the extent to which a strength training program affected the dynamic strength, body image, and self-concept of seventh grade girls. Seventy-one girls (ages 12+1 years at the start of the study) were randomly chosen to participate in either a strength training program (ST) combined with regular physical education activities or be involved in a regular physical education activities class (PE). Testing was administered in a pre- and posttest fashion over 12 weeks. The results showed that the girls who strength trained increased significantly in dynamic strength in both the bench press and leg press. Results also indicated that ST has a positive but not significant effect on the body image (p=.151) and self-concept (p=.067) of seventh grade girls. It was concluded that strength training was beneficial to junior high age girls, as it increased dynamic strength, and had a tendency to help elevate positive body image and self-concept.

Mandell, Ross A. THE INFLUENCE OF ROLE STATUS, SELF-EFFICACY AND SOCCER PERFORMANCE, 1994. M.S., Springfield College (Mimi Murray). (100pp 2 f $8.00) PSY 1784

The lack of research involving role status prompted a study involving the relationship between role status (playing time), physical self-efficacy and performance. Collegiate Division I soccer players (156, 78 male and 78 female), completed the Physical Self-Efficacy (PSE) scale developed by Ryckman, Robbins, Thornton, and Cantrell (1982) which measures ‘perceived physical ability’ and
‘physical self-presentation confidence’ in social situations. The difference in mean self-efficacy scores, measured by the PSE and its two subscales, for male and female starters and non-starters was determined utilizing an analysis of variance for two independent groups factors. In addition, the self-efficacy scores for males and females were correlated to the performance scores utilizing the Spearman rank-order rho coefficient. Starters were found to have higher self-efficacy scores ($p<.05$) while no differences between males and females were found ($p>.05$). Self-efficacy scores were found to positively correlate with performance.

This research study was initiated to provide empirical information regarding the impact of a therapeutic horseback riding program on the self-concept and riding performance of children and adolescents with disabilities. Participants rode one hour per week for six consecutive weeks. Pre-test and post-test measures of self-concept were obtained by using The Piers-Harris Children’s Self-Concept Scale. Results approached significance, ($t=-1.72; p=.06$, one tailed). Riding performance was assessed by the two riding instructors through utilization of a student progress report. Specific riding skills were assessed and given a single score based on whether they attempted, partially completed, or independently performed the skill. Changes in riding performance were not statistically significant ($t=-1.19; p=.13$, one-tailed). The present study is closely related and supports past research in terms of results obtained. In both measures of self-concept and riding performance statistical significance was not achieved; however, scores suggest improvement may have been made in both areas. Extending therapeutic recreation into this arena may be challenging; however serving people in these programs can be a way of enhancing an individual’s competency. This enhancement will allow them to function as independently as possible in their environment.

**SOCIAL PSYCHOLOGY**


Advances in technology have improved training programs, playing surfaces and equipment, yet the incidence of athletic injuries remains high. Recently researchers have begun to focus on the influence of psychosocial factors on the incidence of injuries. Andersen and Williams (1988) proposed an interactional stress-injury model that considers an array of psychosocial factors that may increase or decrease an athlete’s risk of becoming injured. Three categories of variables (history of stressors, personality and coping resources) are predicted to directly or indirectly influence injuries. The present study examined the relationship between major life events, daily hassles, competitive trait anxiety, pessimistic sport attributional style, coping skills and social support (needed, received, and satisfied), and the incidence of injury in women’s collegiate volleyball and basketball players. In addition, this study investigated the pattern of change in daily hassles, competitive anxiety and social support, and their relationship to the occurrence of injury. Furthermore, the relationship between in-season major life events and injury was analyzed. Logistic regression was performed using a combination of psychosocial variables to predict whether an athlete would experience an injury. Based on total life events, daily hassles, competitive anxiety, pessimistic sport attributional style, coping skills and social support, 73% of the athletes were assigned correct group membership. Stepwise multiple regression analysis were executed to determine the relationship between psychosocial variables, and the number of injuries, days lost and days modified. The regression was significant for the number of injuries, with social support received and negative life events determining how many injuries an athlete experienced. To determine mean difference between injured and non-injured athletes, t-tests were performed on each factor. Although no significant differences were observed, effect sizes indicate small to moderate relationships between injured and non-injured athletes. Correlation coefficients were computed between the monthly scores for daily hassles, competitive anxiety and perceived fit, and injuries. The relationships were generally low and non-significant. Finally, t-tests indicated a non-significant relationship between in-season stressful life events and injury, with moderate effect sizes for positive and total life events. Recommendations for future research are discussed.


This study examined the relationship between marital satisfaction of the wife and viewing of televised sports by the husband. The sample included 41 married student couples. For one month, each couple recorded the amount of time they spent viewing televised sports. Each couple was then administered the Dyadic Adjustment Scale (DAS), a 32 item self-reported questionnaire that assesses marital adjustment, and a short Sports and Marriage Scale which was designed to assess how subjects feel about their
spouse’s sport viewing habits. Data analysis included the
construction of scatterplot graphs, simple linear regression
and a Pearson’s correlation coefficient test. Despite
negative trends, no significant relationship was found
between marital satisfaction of the wife and viewing of
televised sports by the husband. However, there was a
highly significant relationship between the wife’s scores
on the Sports and Marriage Scale and the amount of time
that husbands spent viewing televised sports. This means
that husband’s sport viewing time and the amount of
distress reported by the wives are positively associated.

Gentile, Dina. THE PERCEPTIONS OF SPORT MANAGEMENT
STUDENTS TOWARD THE MARKETABILITY OF
PROFESSIONAL ATHLETES, 1994. M.S., Springfield
College (Lynn E. Courturier). (159pp 2 f $8.00) PSY 1774

The marketability of professional athletes was examined
through the responses of graduate sport management
students (N=66). Approximately 16 subjects were placed
into each of four different groups and each subject re-
sponded to two descriptions of hypothetical professional
athletes. The researcher manipulated the variables of
gender of the athlete, sport of the athlete (tennis versus
bodybuilding), appearance of the athlete, and support
system of the athlete (spouse versus close friend). Overall,
the sport management students valued the appeal and
visibility of the sport of tennis over bodybuilding. The
emergent themes from the data centered on the issues
relating to the value of image; appeal of professional team
sport athletes; steroid use in bodybuilding; femininity and
women in sports; heterosexism in the sport arena; and the
impact of the media in professional sports.

Killmer, Karen J. THE DIFFERENCE IN COACH ROLE
MODEL BEHAVIORS FOR MALE AND FEMALE ATH-
LETES, 1993. M.S., Springfield College (Betty J. Mann).
(116pp 2 f $8.00) PSY 1780

Ninety-two athletes who have a coach as a role model
served as subjects for this study in which the important
behavioral dimensions of the coach role model were
identified. The Role Model Scale developed by Gilbert
(1985) was revised by the tester to be athlete specific.
Questionnaires were given to male and female athletes
from a variety of teams. Two separate chi square tests were
calculated, one for male athletes and one for female
athletes, to determine if the athletes have a coach who is a
role model for them. There was a significant number of
female athletes (p=.00) and male athletes (p=.00) who have
a coach role model. An ANOVA was used to analyze the
data on each of the four different subscales for male
athletes with a male coach role model, female athletes with
a male coach role model, and female athletes with a female
couch role model. There was no significant mean difference
(p>.05) on ‘Role Model Behavior’ subscale scores found
among male athletes with male coaches, female athletes
with male coaches, and female athletes with female coaches. No significant (p>.05) mean difference was found
among female athletes with female coaches, female athletes
with male coaches, and male athletes with male coaches on
‘Role Model Relationship’ subscale scores. No significant
(p>.05) mean difference was found on ‘Power and
Achievement of Role Model’ among male athletes with
female coaches, female athletes with male coaches, and
male athletes with male coaches, but the Scheffe Test
indicated no significant (p>.05) specific differences for the
pairs of means.

Ramsay, Michael C. GROUP COHESION AND PERCEP-
TIONS OF PRESSURE TO CONFORM IN A UNIVERSITY
RESIDENCE., 1994. M.A., University of Western Ontario
(Albert V. Carron). (72pp 1 f $4.00) PSY 1788

The purposes of the present study were to examine thenature of conformity behavior perceived by university
students and to study the relationship between group
cohesion and pressure to conform. The subjects (N=368)
were male (N=145) and female (N=223) university students
living in on-campus residences. The nature of conformity
behavior was obtained using an open-ended format. The
subjects supplied information regarding the types of
situations where students felt pressure to conform. They
then rated the pressure they felt to conform in these same
situations. Cohesion was assessed using The Group
Environment Questionnaire (GEQ). The GEQ is an 18-item
questionnaire, originally constructed for use in sport
teams, that identifies four manifestations of cohesion:
Individual Attractions to Group Task (ATG-T), Individual
Attractions to Group Social (ATG-S), Group Integration
Task (GI-T), and Group Integration Social (GI-S). The GEQ
was revised for a residence setting. Analyses indicated that
the internal consistency of the revised version was compa-
rable to the original (Cronbach Alphas ranging from .73 to
.83). A content analysis was performed on the conformity
situations and two main categories emerged: Academic
Related and Lifestyle Related. The Academic Category was
further subdivided into Academic Positive and Academic
Negative. The Lifestyle Category was further subdivided
into Lifestyle Positive, Lifestyle Negative and Lifestyle
Other. The results of the content analysis supported the
conclusion that university students perceived the greatest
pressure to conform in situations categorized as Lifestyle
Negative. In particular, alcohol-related activities were
listed by the largest majority of students. As a result, the
first hypothesis, that university students would perceive
greater pressure to conform in alcohol related situations
than in other situations, was supported. A Mutivariate
Analysis of Variance (MANOVA) revealed that the subjects differed significantly by gender in (a) their perceptions of pressure associated with conformity behaviors and (b) their perceptions of cohesion. Specifically, females expressed greater pressure in conformity behaviors classified as Academic Negative and males expressed greater pressure in conformity behaviors classified as Lifestyle Negative and Lifestyle Other. Females scored significantly higher than males on the cohesion scale ATGS. The nature of the relationship of cohesion to conformity was generally negative. Three of the five manifestations of conformity behavior were related to cohesion. No relationship was found between cohesion and Academic Positive or Lifestyle Positive. Only Academic Negative had a positive relationship to cohesion and that was limited to female subjects. Lifestyle Negative was related to cohesion, in a negative manner, for both male and female subjects. Lifestyle Other was negatively related to cohesion but only for male subjects. Therefore, the second hypothesis, that a positive relationship would exist between a subject’s perception of cohesion on their floor and the amount of pressure they experienced to conform, was not supported. The results were discussed in terms of both the impact of friendship and of idiosyncracy credit on conformity behavior.


The primary purpose of this investigation was to examine the effects of perceived directors’ leadership behaviors on job satisfaction of physical education instructors at Taiwan universities. A secondary purpose of the investigation was to examine the relationships between selected demographic variables and physical education instructors’ overall job satisfaction. A total of 138 physical education instructors employed at Taiwan universities participated in the study. Data were collected through the use of the Chinese version of a demographic information questionnaire, the Leader Behavior Description Questionnaire, Form XII, and the Job Satisfaction Survey. The statistical analysis of the data was performed through the use of t-tests, Pearson product moment correlation, analysis of variance, and multiple regression analysis. The study found (a) physical education instructors of Taiwan universities were satisfied with their jobs in general and with administration/supervision, co-workers, career future, school identification, financial aspects, work conditions, amount of work, and pupil-teacher relations, in particular; (b) there was a significantly positive correlation between physical education instructors’ overall job satisfaction and their perceived directors’ consideration behavior; (c) there was a significantly positive correlation between physical education instructors’ overall job satisfaction and their perceived directors’ initiating structure behavior; (d) there was no significant difference in overall job satisfaction between male and female physical education instructors; (e) there was no significant correlation between physical education instructors’ overall job satisfaction and their age, total teaching years, or teaching years at current school; (f) there was no significant difference in overall job satisfaction among physical education instructors with different academic ranks or highest educational degrees; (g) physical education instructors’ gender, age, total teaching years, teaching years at current school, perceived directors’ consideration behavior, and perceived directors’ initiating structure behavior accounted for 28% of the variance in overall job satisfaction; and (h) Career Future, Work Conditions, and Co-Workers were the three most promising subscales of the Job Satisfaction Survey in predicting physical education instructors’ overall job satisfaction.

STRESS


Eighty-nine North Carolina Public School Principals (52 males, 37 females) volunteered as subjects to determine the relationship between physical fitness, physical activity, health outcomes and perceived occupational stress levels. They completed the School Principals’ Stress Questionnaire (SPSQ). Each had their height, weight, resting blood pressure, total blood cholesterol, percent body fat and predicted aerobic power (Astrand-Rhyming) measured. Based on the SPSQ the principals were divided into three groups: low (≤25%tile) moderate (26-74%tile), and high (≥75%tile). Both the low and high stress groups had higher physical fitness (p<.02) and percent body fat (p<.01 ) than the moderate stress group. The high stress group also reported a significantly higher amount of illness (p<.04). The low stress principals seem to use exercise as a means of coping with stress (p=.052). While the high stress principals are suffering considerably higher illness rates, regardless of exercise participation or fitness level.
PART II

KEYWORDS INDEX
for
VOLUME 8, NO. 1

This index includes keywords for titles published in microfiche format by Microform Publications in Supplement Volume 8, No. 1 (April 1995).

Each title in Part I is indexed using keywords selected and assigned from the Sport Thesaurus, published by the Sport Information Resource Centre (SIRC), located in Gloucester, Canada. (Users should note that British spelling conventions [e.g., behaviour] occasionally appear.) In addition to keywords identifying the content of a study, the major research methods are identified by the statistical technique employed and appear in brackets immediately following the keywords list for each title. Users may find these methodological and statistical descriptors helpful in identifying a particular design or statistical prototype for their own research investigations. A listing of statistical abbreviations used in this index is found on the following page.

The first keyword for each title was used to generate the primary topical categories for the index; they appear in bold typeface. Titles having the same first keywords (primary topical category) are grouped under that category. The remaining keywords for each separate title are indented and listed, from general to specific, followed by the research and statistical methods used in the study contained in brackets (note that letters before the dash refer to the research methods, those after the dash denote the statistical methods), the author’s last name and initials, and the identification number for the title. The following example illustrates the elements of each entry.

BIOMECHANICS

ANKLE JOINT, RANGE OF MOTION, BRACE, STEP TRAINING, INJURY, SPRAIN, SEGMENTAL ANALYSIS TECHNIQUE, VARIANCE; [D,MA-DE,MR]. Money, S.M., PE 3439

Biomechanics is the primary topic of this study; keywords ankle joint through variance further delimit it. The research methods include descriptive and mechanical analysis techniques; statistics are descriptive and multiple regression. The author is S.M. Money and the study's identification number is PE 3439. To find the title of the study as listed in part I of the Supplement, use the author index at the end of the Supplement to find the page number on which the study by S.M. Money is listed.

Criteria used to determine whether a study is experimental include the use of a control group and the manipulation of an independent variable or variables. Studies designed to examine correlations among selected variables in a particular population are classified as surveys.

Specific abbreviations for research methods and the statistical techniques that were used are listed alphabetically as follows:
### METHODS

<table>
<thead>
<tr>
<th>A</th>
<th>Anthropometry</th>
<th>E</th>
<th>Experimental</th>
<th>M</th>
<th>Model</th>
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<td>AR</td>
<td>Action Research</td>
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<td>MA</td>
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<td>Case Study</td>
<td>H</td>
<td>Historical</td>
<td>O</td>
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<td>CA</td>
<td>Content Analysis</td>
<td>I</td>
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<td>Choreography</td>
<td>IA</td>
<td>Item Analysis</td>
<td>Q</td>
<td>Questionnaire</td>
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<td>CI</td>
<td>Critical Incident Analysis</td>
<td>J</td>
<td>Jury</td>
<td>REV</td>
<td>Review</td>
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<td>Comparative Study</td>
<td>JA</td>
<td>Job Analysis</td>
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<td>Survey</td>
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<td>Laboratory</td>
<td>SD</td>
<td>Semantic Differential</td>
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<td>DA</td>
<td>Documentary Analysis</td>
<td>LR</td>
<td>Library Research</td>
<td>TC</td>
<td>Test Construction</td>
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### STATISTICS

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<th>AC</th>
<th>Analysis of Covariance</th>
<th>MAC</th>
<th>Multivariate Analysis of Covariance</th>
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<th>Kendall Coefficient of Concordance</th>
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<td>AV</td>
<td>Analysis of Variance</td>
<td>MAV</td>
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<td>WD(R)</td>
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<td>Sign Test</td>
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<td>SP</td>
<td>Split Plot Repeated Measures Analysis</td>
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<td>Hartley’s Method</td>
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<td>Signed Ranks</td>
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<td>Votaw Formula</td>
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<td>LSD</td>
<td>Least Significant Variance</td>
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KEYWORDS

ACADEMIC ACHIEVEMENT

ATHLETE, FOOTBALL, UNIVERSITY, TRAINING CYCLE, VARIANCE; [D,DA-DE,AV,RM]. Hickey, K.P., PE 3510

PERFORMANCE PREDICTION, SECONDARY SCHOOL, SPORT, PARTICIPATION, BOY, GIRL, COMPARATIVE STUDY, VARIANCE. Honey, M.J., PE 3512

ACHIEVEMENT MOTIVATION

GOALS, NON-COMPETITOR, WEIGHT TRAINING, MAN, CAUCASIAN, HAWAIIAN, INTERVIEW, CROSS CULTURAL STUDY; [D,CA,COM,I-DE]. Hayashi, C.T., PSY 1778

ACHILLES TENDON

BANDAGE, TAPING, PRO M-P ACHILLES STRAP, MUSCLE CONTRACTION, TORQUE, SEX FACTOR, VARIANCE; [D,L,MA-DE,AV,RM,SCH]. Morales, A.D., PE 3525

ADVERTISING

FACILITY, SPORT, UNIVERSITY, FUNDING, ATTITUDE INVENTORY, NATIONAL COLLEGIATE ATHLETIC ASSOCIATION, SURVEY; [D,S-DE,RPM,%]. Pope, E.M., PE 3531

AEROBIC CAPACITY

OXYGEN CONSUMPTION, HEART RATE, JOGGING, RUNNING, ADOLESCENT, INSTRUMENTATION, TEST RELIABILITY, MULTIPLE REGRESSION ANALYSIS; [D,TC-DE,MR,RE,T]. Hunt, B.R., PH 1394

PHYSICAL FITNESS, TESTING, AGILITY, CHILD, ELEMENTARY SCHOOL, TEST RELIABILITY, COMPARATIVE STUDY; [D-DE,AV,RC,RPM,T]. Dinschel, K.M., PH 1381

PHYSICAL FITNESS, TESTING, TREADMILL, PARENT, CHILD, CORRELATION; [D,A,L-DE,CS,PD,RPM]. Guion, W.K., PH 1389

STEP TEST, DIETARY FAT, DIETARY CARBOHYDRATE, WOMAN, CORRELATION, MULTIVARIATE ANALYSIS; [D,Q-DE,AV,AC,MAV,RPM]. Kano, M., PH 1398

AEROBIC TRAINING

STAIRCLIMBING, BACKACHE, EXERCISE, THERAPY, HEART RATE, BLOOD PRESSURE, PERCEIVED EXERTION, ENERGY EXPENDITURE, VARIANCE; [D,L DE,AV,RM]. Ryan, P.T., PH 1409

ANAEROBIC TRAINING

SLIDEBOARD, JUMPING, VERTICAL JUMP, MUSCLE CONTRACTION, QUADRICEPS, TORQUE, ATHLETE, BASKETBALL, WOMAN, VARIANCE; [D,MA DE,AV,RPM]. Thomas, T.R., PH 1413

ANKLE

INJURY, SPRAIN, EDEMA, TRANSCUTANEOUS ELECTRIC NERVE STIMULATION, CRYOTHERAPY, VARIANCE; [E,L-DE,AV,RM,TU]. Galley, S-L., PE 3507

ANKLE JOINT

BRACE, ORTHOTIC DEVICE, DEROTATION BRACE, STABILIZER, VERTICAL JUMP, SPRINTERING, SHUTTLE RUN TEST, ATHLETE, FOOTBALL, VARIANCE; [D,MA DE,AV,RM]. Macpherson, K., PE 3520

INJURY, RANGE OF MOTION, STABILOMETRY, BRACE, HOPPING, JUMPING, VARIANCE; [D,MA DE,AV,RC,RLM]. Rockhill, B.H., PE 3536

INJURY, REHABILITATION, EQUILIBRIUM, PROPRIOCEPTION, CRYOTHERAPY, BRACE, VARIANCE; [D-DE,AV]. Rivers, D.A., PE 3534

ANOXEMIA

ETIOLOGY, HYPERVENTILATION, MAN, CORRELATION; [D,L-DE,AV,BON,MR,RPM,T]. Harms, C.A., PH 1391

ANTHROPOMETRY

METHOD, BODY DENSITY, BLACKS, WOMAN, UNITED STATES, MATHEMATICAL MODEL, MULTIPLE REGRESSION ANALYSIS; [D,A,L-DE,AV,MR,RE,RPM,TU]. Irwin, M.L., PE 3514

ANXIETY

PRE-COMPETITION, ATHLETE, ADOLESCENT, SWIMMING, COMPARATIVE STUDY; [E,Q-DE,AV,MAV,MR,RM,SCH]. Greenberg, D.L., PSY 1775

APPLIED BEHAVIOUR ANALYSIS

DISENGAGEMENT, COMPETITIVE BEHAVIOUR, COPING BEHAVIOUR, DECISION-MAKING, SELF-CONCEPT, SEX FACTOR, ATHLETE, UNIVERSITY, QUESTIONNAIRE, RETROSPECTIVE STUDY; [D,Q-DE,MR,RE,RPM]. Cramer-Hamman, B., PSY 1772
INTRINSIC MOTIVATION, REWARD, NON-COMPETITOR, NON-ATHLETE, WOMAN, SIT-UP, BICYCLE ERGOMETRY, VARIANCE; [E,Q-DE,AV]. Tally, E., PSY 1794

ASTHMA

EXERCISE-INDUCED ASTHMA, ALBUTEROL, ENERGY METABOLISM, RESPIRATION, BICYCLE ERGOMETRY, MULTIVARIATE ANALYSIS; [E,L-DE,AV,MAV,RM,SCH,TU]. Jennen, T.M., PH 1385

ATHLETIC TRAINER

ATHLETIC TRAINING, FACILITY, PROFESSIONAL PREPARATION, NATIONAL ATHLETIC TRAINERS’ ASSOCIATION, SURVEY; [D,J,S-DE,AV,RM]. Sabo, J.M., PE 3537

SECONDARY SCHOOL, NEEDS, NEW YORK STATE, SURVEY, PROSPECTIVE STUDY; [D,S-DE]. Koabel Bagley, P., PE 3518

ATHLETIC TRAINING

EMPLOYMENT, JOB SATISFACTION, LIFE SATISFACTION, SEX FACTOR, SURVEY, PROSPECTIVE TRAINING; [D,J,S-DE]. Marks, M.A., PE 3522

ATTITUDE INVENTORY

CHILDREN’S ATTITUDE TOWARD PHYSICAL ACTIVITY, INVENTORY, KNOWLEDGE LEVEL, PHYSICAL FITNESS, SEX FACTOR, AGE FACTOR, MULTIVARIATE ANALYSIS; [D,Q-DE,DisA,KR,MAV,RP]. Bocket, T.J., PSY 1764

STUDENT, GRADUATE, MARKETING, PROFESSIONAL ATHLETE, TENNIS, BODYBUILDING, SEX FACTOR, MARITAL STATUS, HOMOSEXUALITY, COMPARATIVE STUDY; [D,CA,Q-DE]. Gentile, D., PSY 1774

TOURISM, SOCIOECONOMIC FACTOR, PENNSYLVANIA, SURVEY; [D,S-DE,AV,FA,RC]. Seid, B.S., RC 483

ATTRIBUTION

ACHIEVEMENT MOTIVATION, MATHEMATICS, PHYSICAL EDUCATION, READING, LEARNED HELPLESSNESS, MASTERY LEARNING, STUDENT, ELEMENTARY SCHOOL, COMPARATIVE STUDY; [D,J,O-DE,CS,GA]. Griffith, J.B., PSY 1776

BASEBALL

PITCHING, FASTBALL, SPEED, ACCURACY, RECOVERY, VARIANCE; [D,MA-DE,AV]. Hendrickson, W.R., PSY 1779

BASKETBALL

OFFENSE, STRATEGY, PATTERN, COMPARATIVE STUDY; [D-DE,AV]. Papachatzis, T., PE 3528

BIOMECHANICS

AIMING, MOTOR SKILL, ARM, THEORETICAL MODEL; [D,M,MA-DE,RE]. States, R.A., PE 3541

BATTLING, STANCE, GROUND REACTION FORCE, SPEED, REACTION TIME, COMPARATIVE STUDY; [D,MA-DE,AV,NK,RM]. LaBranche, M.J., PE 3519

KNEE JOINT, MENISCUS, KINESIOLOGY, RANGE OF MOTION, NUCLEAR MAGNETIC RESONANCE, COMPARATIVE STUDY; [D,L,MA-DE,T]. Porter, S.T., PE 3532

BODY COMPOSITION

ADIPOSE TISSUE, OBESITY, ETIOLOGY, DIET, DIETARY FAT, DIETARY CARBOHYDRATES, CELLULOSE, MAN, MULTIVARIATE ANALYSIS; [D,A,Q-DE,AV,MAV,M]. Nelson, L.H., PE 3527

ADIPOSE TISSUES, WEIGHT LIFTING, WEIGHT TRAINING, WRESTLING, ATHLETE, COMPARATIVE STUDY; [D,A-DE,T]. Bergerson, M., PH 1373

MENTAL RETARDATION, ADULT, CROSS-CULTURAL STUDY, GERMANY, UNITED STATES, 1990D; [D,A,COM,Q-DE,AV]. Frey, B., PH 1386

BODY IMAGE

SELF-CONCEPT, ANXIETY, TESTING, INSTRUMENTATION, TEST RELIABILITY, FACTOR ANALYSIS; [D,Q,TC-DE,CS,FA]. Lutter, C.D., PSY 1783

SELF-CONCEPT, STRENGTH, TRAINING, ADOLESCENT GIRL, COMPARATIVE STUDY; [D,MA-DE]. Lucas, J., PSY 1782

BODY WEIGHT

WEIGHT CONTROL, LEISURE EDUCATION, SURVEY, ATTITUDE INVENTORY, SEX FACTOR, MULTIPLE REGRESSION ANALYSIS; [D,S,TC-CD,AV,MR]. Castille, C.L., RC 478

BONE DENSITY

OSTEOPOROSIS, PREVENTION, WEIGHT TRAINING, WOMAN, MIDDLE AGE, VARIANCE; [E,L-Q-DE,AC,AV,MAV,RM,T,Z]. Dornemann, T.M., PH 1382
CAFFEINE
PREMENSTRUAL SYNDROME, CORRELATION; [D,Q-DE,AV,FA]. Norton, R., HE 545

CARDIOVASCULAR DISEASE
RISK, BODY COMPOSITION, ADIPOSE TISSUE, WAIST, HIP, MEASUREMENT, BLOOD PRESSURE, CHOLESTEROL, EXERCISE, SMOKING, CORRELATION; [D,A,L,Q-DE,CS,RPM,T]. Thomas, A.C., HE 546

CHROMIUM
DIETARY CARBOHYDRATE, DIETARY FAT, ENDURANCE, TRAINING, PHYSICAL FITNESS, TESTING, VARIANCE; [E,L-DE,AV,NK,T]. Kocher, P.L., PH 1401

CIRCUIT TRAINING
WEIGHT TRAINING, BLOOD PRESSURE, HYPERTENSION, AEROBIC CAPACITY, MUSCLE, STRENGTH, BODY COMPOSITION, PSYCHOLOGY, WOMAN, NON ATHLETE, COMPARATIVE STUDY; [D,A,C-DE,G]. Lynes, L.K., PH 1404

COCAINE
EXERCISE, CARBOHYDRATE METABOLISM, ADRENAL MEDULLA, CATECHOLAMINE, GLYCOGENOLYSIS, EPINEPHRINE, RAT, VARIANCE; [E,L-DE,AV,LSD]. Ojuka, E.O., PH 1405

EXERCISE, ENERGY METABOLISM, CATECHOLAMINE, EPINEPHRINE, NOREPINEPHRINE, LACTATE, BLOOD GLUCOSE, RAT, MULTIVARIATE ANALYSIS; [E,L-DE,MAV]. Han, D.H., PH 1405

EXERCISE, FATIGUE, CARBOHYDRATE METABOLISM, LACTATE, BLOOD GLUCOSE, RAT, VARIANCE; [E,L-DE,AV,LSD]. Braiden, R.W., PH 1373

REST, EXERCISE, MUSCLE METABOLISM, ENERGY METABOLISM, GLYCOCEN, EPINEPHRINE, NOREPI-NEPHINE, DOPAMINE, CORTICOSTERONE, LAC-TATE, BLOOD GLUCOSE, RAT, VARIANCE; [E,L-DE,AV,LSD]. Kelly, K.P., PH 1399

COMPETITIVE BEHAVIOUR
BASKETBALL, STARTER, SUBSTITUTE, UNIVERSITY, SECONDARY SCHOOL, ELEMENTARY SCHOOL, COMPARATIVE STUDY; [D,Q-DE,AV]. Schoen, C.H., PSY 1790

CYCLING
WINGATE ANAEROBIC TEST, CARBOHYDRATE LOADING, ELITE ATHLETE, VARIANCE; [D,L-DE,AV,RM,T]. Ball, T.C., PH 1372

DANCE
CHOREOGRAPHY, CREATIVITY, CASE STUDY; [D,C,CH-]. Miller, RD., PE 3524

CULTURE, WOMAN, AFGANISTAN, HISTORY, 1970D, CHOREOGRAPHY, INTERVIEW, RETROSPECTIVE STUDY; [D,C,H,LR]. St. John, K., PE 3540

FOLK DANCE, SOCIAL DANCE, ETHNIC GROUP, MULTICULTURALISM, ARAB, SEATTLE, ETHNOGRAPHY, ETHNOLOGY, INTERVIEW; [D,LR,DE]. Wartluft, E.M., PE 3543

MODERN DANCE, CHOREOGRAPHY, STORY, SPECTATOR, QUESTIONNAIRE, EVALUATION; [D,CH,LR,Q-]. Cambridge, L.A., PE 3505

DIABETES MELLITUS
INSULIN, BLOOD GLUCOSE, STAIRCLIMBING, STEP TRAINING, VARIANCE; [D,L-DE,AV,MR]. Gagalis, Z., HE 541

DIET
DIETARY FAT, DIETARY CARBOHYDRATE, EXERCISE, ATHLETE, NON-ATHLETE, AGED, SEX FACTOR, VARIANCE; [D,Q-DE,AV]. Kennington, A., HE 544

EATING
APPETITE DISORDER, EXERCISE, APPLIED BEHAVIOUR ANALYSIS, INTERNAL-EXTERNAL CONTROL AFFECT, ANXIETY, DEPRESSION, WOMAN, MULTI VARIATE ANALYSIS; [E,Q-DE,AV,MAV]. Hart, E.A., PSY 1777

ENERGY METABOLISM
AEROBIC METABOLISM, ANAEROBIC METABOLISM, MUSCLE METABOLISM, HEART, ENDURANCE, TRAINING, SPRINT TRAINING, NON-ATHLETE, RAT, VARIANCE; [E,L-DE,AV]. Gow, A.J., PH 1388

ENERGY METABOLISM
BODY TEMPERATURE, BODY TEMPERATURE REGULA-TION, COLD, HEAT, AQUATIC ACTIVITIES, ARM ERGOMETRY, SEX FACTOR, VARIANCE; [D,L-DE,AV,NK,RM]. Shea, K., PH 1410

ENERGY COST, DOWNHILL SKIING, ERGOMETRY, TREADMILL, REGRESSION ANALYSIS; [D,L-DE,RE,T]. Audet, D., PH 1370

ENERGY EXPENDITURE, OXYGEN CONSUMPTION, DISTANCE RUNNING, CYCLING, WOMAN, TRIATHLON, MODERN BIATHLON, COMPARATIVE STUDY; [D,L-DE,RT]. Danner, T., PH 1379
ENERGY EXPENDITURE, WALKING, TREADMILL, CROSS WALK, FIELD TEST, COMPARATIVE STUDY; [D,L-DE,T]. Foley, T.S., PH 1384

ENERGY EXPENDITURE, WALKING, TREADMILL, CROSS WALK, WOMAN, FIELD TEST, COMPARATIVE STUDY; [D,L-DE,T]. Knox, K.M., PH 1400

ENVIRONMENTAL HEALTH

WATER POLLUTION, WATER QUALITY, APPLIED BEHAVIOUR ANALYSIS, ATTITUDE INVENTORY, BOATING, CHESAPEAKE BAY, SURVEY, SOCIOECONOMIC FACTOR, KNOWLEDGE LEVEL, MULTIPLE REGRESSION ANALYSIS; [D,LS-DE,AV,MR,RC]. Cottrell, S.P., PSY 1771

EXERCISE

EXERCISE PRESCRIPTION, DIABETES MELLITUS, BICYCLE ERGOMETRY, VARIANCE; [D,L-DE,AV,RM]. Dauley, P.A., PH 1380

RELAXATION, EXERCISE PRESCRIPTION, AEROBIC TRAINING, AEROBIC DANCE, INTRINSIC MOTIVATION, ADOLESCENT, GIRL, VARIANCE; [E,Q-DE,AV]. Jordan, M.C., PH 1397

TRAINING, TRAINING LOAD, APPLIED BEHAVIOUR ANALYSIS, TELEVISION VIEWING, PERCEIVED EXERTION, WOMAN, VARIANCE; [D-DE,AV,MR]. Viteri, J.E., PSY 1795

FIBRE

MUSCLE, FAST-TWITCH FIBRE, MUSCLE CONTRACTION, QUADRICEPS, PERFORMANCE PREDICTION, SELF EVALUATION, REGRESSION ANALYSIS; [D,MA,Q-DE,RE,Z]. Foran, J.F., PH 1385

FISHING

ANGLING, TROUT, ATTITUDE INVENTORY, SATISFACTION, SURVEY, COMPARATIVE STUDY; [D,S,TC-DE,AV,SCH]. Lloyd, G.S., RC 481

FLEXIBILITY

HAMSTRING, BACK, LUMBOSACRAL REGION, ADOLESCENT, TEST RELIABILITY; [D-DE,AV,MR,RE,RPM,T]. Garcia, S.C., PH 1387

GROUP COHESION

SOCIAL CONFORMITY, STUDENT, UNIVERSITY, SEX FACTOR, MULTIVARIATE ANALYSIS; [D,CA,Q-DE,MAV,RC]. Ramsay, M.C., PSY 1788

HEALTH EDUCATION

ADULT, WOMAN, SELF-EFFICACY, EXERCISE, TRAINING, VARIANCE; [E,I,Q-DE,AV,CS,MR,RP]. Hubball, H.T., HE 543

PROGRAM, ATTITUDE INVENTORY, TEACHER, ELEMENTARY SCHOOL, QUESTIONNAIRE, INTERVIEW, COMPARATIVE STUDY; [D,1,Q-DE,AV,MR,RP]. Byrnes, J., HE 539

HEALTH PROMOTION

EMPLOYEE, PHYSICAL FITNESS, PROGRAM, SURVEY; [D,LR,S-DE,CS,T]. Underwood, L.S., HE 547

HEART DISEASE

PREVENTION, HEART PROMOTION, EMPLOYEE, PHYSICAL FITNESS, AMERICAN HEART ASSOCIATION, RETROSPECTIVE STUDY; [D,DA,LR-DE,CS,LR,RPM]. Frank, L.B., HE 540

REHABILITATION, CORONARY DISEASE, MYOCARDIAL REVASCULARIZATION, DIABETES MELLITUS, RETROSPECTIVE STUDY; [D,DA,Q-DE,AV,CS]. Couch, L.C., PH 1378

REHABILITATION, HEART FUNCTION TEST, PHYSICAL FITNESS, TESTING, STEP TEST, TREADMILL, BICYCLE ERGOMETRY, ARM ERGOMETRY, HISTORY, 1900H, REVIEW; [D,DA,H,I,LR-]. Bickum, B.D., PH 1374

HEART RATE

WEIGHTLIFTING, POWERLIFTING, BENCH PRESS, SQUAT, WOMAN, CORRELATION; [D,L-DE,RPM,T]. Ritzer, C.L., PH 1407

HOSTILITY

HEART DISEASE, RISK, CORONARY PRONE BEHAVIOUR, INDIANS OF NORTH AMERICA, CAUCASIAN, SEX FACTOR, COMPARATIVE STUDY; [D,L,Q-DE,AV,CS,RPM,Z]. Cofrancesco, L., PSY 1770

HYDROSTATIC WEIGHING

NATANT DISKS, BODY COMPOSITION, BODY DENSITY, ADIPOSE TISSUE, INSTRUMENTATION, TEST RELIABILITY; [D,A-DE,AV,BON,RC,MR]. Jorgensen, A.G., PE 3516

INCENTIVE MOTIVATION

COMPETITIVE BEHAVIOUR, SEX FACTOR, ALPINE SKIING, COMPARATIVE STUDY; [D,Q-DE,AV,MAV,DisA,RPM,T]. Chroni, S., PSY 1768
INJURY
STRESS, PERSONALITY, COPING BEHAVIOUR, ATHLETE, WOMAN, VOLLEYBALL, BASKETBALL, MULTIPLE REGRESSION ANALYSIS; [D,Q-DE,LR,MR,RC,T]. Byrd, B.J., PSY 1766

INTERNAL-EXTERNAL CONTROL
CONTRACT, HEALTH PROMOTION, ATTITUDE INVENTORY, APPLIED BEHAVIOUR ANALYSIS; [D,Q-DE,AC]. Flint, M.O., PSY 1773

ISOKINETIC TRAINING
BIODEX, MUSCLE, STRENGTH, MUSCLE CONTRACTION, LEG, PHYSICAL THERAPY, REHABILITATION, COMPARATIVE STUDY; [E,MA-DE,AC,TU]. Mahler, E.B., PE 3521

JOB SATISFACTION
PHYSICAL EDUCATION, TEACHER, LEADERSHIP, SUPERVISION, SURVEY, TAIWAN, PROSPECTIVE STUDY; [D,J,S-DE,AV,MR,RPM,T]. Yang, C., PSY 1796

JUMPING
VERTICAL JUMP, DANCE, FOLK DANCE, STRENGTH, TRAINING, ISOMETRIC TRAINING, TOE, ANKLE JOINT, FLEXIBILITY, VARIANCE; [E,MA-DE,AV]. Meiners, E.P., PE 3523

KNEE JOINT
JOINT INSTABILITY, LIGAMENT, ARTICULAR LIGAMENT, GONIOMETRY, GYMNASTICS, ATHLETE, NON ATHLETE, WOMAN, VARIANCE; [D,MA-DE,AV,MR]. Brannan, T.L., PE 3504

LEADERSHIP
RECREATION, ATTITUDE INVENTORY, PROFESSIONAL PREPARATION, MENTAL RETARDATION, EDUCABLE MENTALLY RETARDED, SURVEY, COMPARATIVE STUDY; [D,S-DE,MR]. McCrea, D.M., RC 482

LEARNING
MOTOR SKILL, POSTURE, BODY POSITION, PSYCHOMOTOR PERFORMANCE, PERCEPTUAL DISTORTION, VISUAL PERCEPTION, BODY AWARENESS, CHILD DEVELOPMENT, INFANT, LONGITUDINAL STUDY; [D,MA-DE,AV,G,SI,T]. Sveistrup, H., PSY 1793

LEISURE
LEISURE EDUCATION, SATISFACTION, INTERPERSONAL RELATIONS, BRAIN DISEASE, ALZHEIMER’S DISEASE, PROSPECTIVE STUDY; [D,J,Q-DE,%. Waskiewicz, B.A., RC 485

LIPID
BURN, REHABILITATION, AEROBIC TRAINING, VARIANCE; [E,L-DE,AV,NK]. Bacon, H., PH 1371

LOCOMOTION
KNEE JOINT, RANGE OF MOTION, BIOMECHANICS, KINETICS, ELECTROMYOGRAPHY, INFANT, CHILD DEVELOPMENT, LONGITUDINAL STUDY; [D,C,MA-DE,AV]. Roncesvalles, M.N.C., PSY 1789

MARRIAGE
SATISFACTION, TELEVISION VIEWING, SPORT, SPOUSE, CORRELATION; [D,J,Q,TC-DE,ETA,RC]. Cherrington, K.Y., PSY 1767

MEET
COMPETITION, POST-SEASON, HOST CITY, ATTITUDE INVENTORY, UNIVERSITY, MANAGER, ATHLETIC DIRECTOR, COACH, ATLANTIC COAST CONFERENCE, COMPARATIVE STUDY; [D,J,S-DE,CS]. Smith, L.J., PE 3539

MENSTRUATION
CALORIC INTAKE, ENERGY EXPENDITURE, ENERGY METABOLISM, NON-COMPETITOR, NON-ATHLETE, VARIANCE; [D,A,Q-DE,AV,TU]. Holliman, S.C., PH 1393

MOTIVATION
MANAGER, COACH, AQUATIC ACTIVITIES, AQUATIC SPORT, SWIMMING, SEX FACTOR, VARIANCE, CORRELATION; [D,LR,S-DE,KW,RD,W]. Smith, J.B., PSY 1791

MOTOR SKILL
BIOMECHANICS, LEG, KNEE, ARTICULAR LIGAMENT, PERFORMANCE PREDICTION, NON-ATHLETE, SEX FACTOR, COMPARATIVE STUDY; [D,MA-DE,MR,RC]. Groves, M.D., PE 3509

MULTIPLE SCLEROSIS
PHYSICAL FITNESS, TESTING, AEROBIC TRAINING, EXERCISE, THERAPY, PROSPECTIVE STUDY; [D,A,LE,DE,AV,MAV,MR]. Gappmaier, E., HE 542
MUSCLE
POWER, ARM, LEG, BODY WEIGHT, DEHYDRATION, REHYDRATION, ATHLETE, WRESTLING, VARIANCE; [D-DE,AV,RE,MR,TU]. Vorhis, P.E., PH 1414
STRENGTH, MUSCLE CONTRACTION, LEG, ATHLETE, MAN, WOMAN, FENCING, INJURY, ETIOLOGY, VARIANCE; [D-DE,AV,RE,RC,TU]. Casey, K.M., PH 1376

MUSCLE CONTRACTION
BACK, WEIGHT RESISTANCE MACHINE, ENDURANCE, WOMAN, AGE FACTOR, COMPARATIVE STUDY; [D-DE,AV,SCH]. Kuramoto, A.K., PH 1402
FORCE, STRENGTH, MEASUREMENT, DYNAMOMETRY, TEST RELIABILITY; [D,LM-DE,RC]. Jefferson, L.M., PE 3515
ISOKINETIC, ARM, TORQUE, EXERCISE, THERAPY, VARIANCE, TEST RELIABILITY; [D,MA-DE,AV,RC]. Gorman, M.E., PE 3508
SORENESS, ETIOLOGY, PREVENTION, WRIST, COMPARATIVE STUDY; [D,L-DE,AV,MR]. Cleary, M.A., PE 3506

MUSCLE TONUS
STRENGTH, ISOMETRIC TRAINING, BODY BAR, WALKING, WOMAN, MULTIVARIATE ANALYSIS; [E,MA-DE,AC,AV,MAV,MR]. Mortell, R., PE 3526

OBESITY
LIPID, CHOLESTEROL, HDL LIPOPROTEIN, TRIGLYCERIDE, DIETARY FAT, EXERCISE, SEX FACTOR, CHILD, ELEMENTARY SCHOOL, MULTIPLE REGRESSION ANALYSIS; [D,A,L-DE,AV,MR,RPM]. Strano, A., PH 1383

OXYGEN CONSUMPTION
POST-EXERCISE, BICYCLE ERGOMETRY, AEROBIC CAPACITY, PHYSICAL FITNESS, NON-COMPETITOR, NON-ATHLETE, VARIANCE; [D,A,L-DE,AV,RE,MR]. Short, K.R., PH 1411

PADDLING
CANOEING, KAYAKING, SITE, APPLIED BEHAVIOUR ANALYSIS, MOTIVATION, SEX FACTOR, SURVEY, THEORETICAL MODEL, VARIANCE; [D,MS-DE,AV,CA,F,M,DisA,MR]. Lee, S.H., RC 480

PERFORMANCE PREDICTION
ANATOMY, KNOWLEDGE LEVEL, CERTIFICATION, ATHLETIC TRAINER, NATIONAL ATHLETIC TRAINERS’ ASSOCIATION, REGRESSION ANALYSIS; [D,J,M-DE,AV,RE,RPM,T,TU]. Huntington, M.W., PE 3513

PHILOSOPHY
AESTHETICS, TAICHICHUAN, MODERN DANCE, THEATRE, PEOPLE’S REPUBLIC OF CHINA, REVIEW; [D,P-]. Yu, J-W., PE 3545

PHYSICAL FITNESS
TESTING, AEROBIC CAPACITY, EQUILIBRIUM, DEAFNESS, NON-HANDICAPPED, BICYCLE ERGOMETRY, STEP ERGOMETRY, VARIANCE; [D-DE,AC,AV,RC]. Ellis, M.K., PH 1383
TESTING, CHILD, ADOLESCENT, CROSS-CULTURAL STUDY; [D,A,COM-DE]. Lamb, J.A., PH 1403

PRINCIPAL
STRESS, PHYSICAL FITNESS, EXERCISE, COMPARATIVE STUDY; [D,Q-DE]. Leonard, A.C., PSY 1781

RECREATION
MANAGEMENT, MARINA, CONSUMER, ATTITUDE INVENTORY, BOATING, SURVEY, COMPARATIVE STUDY; [D,5,TC-DE,AV,RC,RE,T]. Tsao, E.S., RC 484
THERAPY, CAREER DEVELOPMENT, PROFESSIONALISM, SURVEY, ALBERTA, COMPARATIVE STUDY; [D,S-DE,RC]. Kelland, J., RC 479

RELAXATION
SUGGESTION, AUTOGENIC TRAINING, APPLIED BEHAVIOUR ANALYSIS, SEX FACTOR, VARIANCE; [E-DE,AV]. Olpin, M.N., PSY 1787

RESIDUAL VOLUME
RESPIRATORY FUNCTION TEST, SPIROMETRY, TEST RELIABILITY, COMPARATIVE STUDY; [D,L-DE,AV,MR,RPM]. Johnson, B.M., PH 1396

RESPIRATION
ANOXEMIA, HYPERCAPNIA, BICYCLE ERGOMETRY, ELITE ATHLETE, MAN, MULTIVARIATE ANALYSIS; [D,L-DE,AV,MAV,MR]. Cooper, T.K., PH 1377

ROLE MODEL
COACH, ATHLETE, UNIVERSITY, MAN, WOMAN, COMPARATIVE STUDY; [D,J,Q-DE,AV,CS,SCH]. Killmer, K.J., PSY 1780
SELF-CONCEPT

COMPETITIVE BEHAVIOUR, APPLIED BEHAVIOUR ANALYSIS, SEX FACTOR, TRAINING CYCLE, TIME FACTOR, SWIMMING, VARIANCE; [D,Q-DE,AC,AV,BON,NK]. Antshel, K.M., PSY 1763

HORSEBACK RIDING, RECREATION, THERAPY, PERFORMANCE PREDICTION, HANDICAPPED, CHILD, ADOLESCENT, COMPARATIVE STUDY; [D,Q-DE,T]. Stuler, L.R., PSY 1792

SELF-EFFICACY

STARTER, PERFORMANCE PREDICTION, SOCCER, SEX FACTOR, VARIANCE; [D,Q-DE,AV,RD]. Mandell, R.A., PSY 1784

SELF-ESTEEM

INTERNAL-EXTERNAL CONTROL, SPORT, APPLIED BEHAVIOUR ANALYSIS, STUDENT, UNIVERSITY, INSTRUMENTATION, TEST RELIABILITY; [D,Q-TC-DE,AV,FA,RC,RPM]. Manzo, L.G., PSY 1785

PHYSICAL FITNESS, STUDENT, UNIVERSITY, MAN, HONG KONG, CORRELATION; [D,Q-DE,MR,RPM]. Chung, P.K., PSY 1769

QUALITY OF LIFE, HEART DISEASE, REHABILITATION, SEX FACTOR, QUESTIONNAIRE, VARIANCE; [D,Q-DE,AV]. Boge, J., PSY 1765

SHOULDER JOINT

ROTATOR CUFF, RANGE OF MOTION, THrowing, BASEBALL, SPEED, STRENGTH, TRAINING, FLEXIBILITY, VARIANCE; [E,MA-DE,AV]. Ploeger, R., PE 3530

SPORT

PROFESSIONAL, FOOTBALL, INDIANAPOLIS COLTS, SOCIOECONOMIC FACTOR, ECONOMICS, POLITICS, INDIANAPOLIS, HISTORY, INTERVIEW, CASE STUDY; [D,C,DA,H,1-DE]. Schimmel, K.S., PE 3538

UNIVERSITY, ADMINISTRATION, ATHLETIC DIRECTOR, PROFESSIONAL PREPARATION, MANAGER, ATTITUDE INVENTORY, SURVEY, COMPARATIVE STUDY; [D,J,S-DE,T]. Quinn, R.W., PE 3533

UNIVERSITY, DANCE, HISTORY, PHILOSOPHY, PROGRAM DESIGN, COMPARATIVE STUDY; [D,H,LR,M,P,S-DE]. Kilboume, J.R., PE 3517

SPRINTING

PLYOMETRIC TRAINING, JUMPING, SARGENT JUMP, STANDING LONG JUMP, CALF, INJURY, SHOES, VARIANCE; [E-DE,AV,SCH]. Pethan, S.M., PH 1406

STRENGTH

PERFORMANCE PREDICTION, POWERLIFTING, BENCH PRESS, PUSH-UP, MULTIPLE REGRESSION ANALYSIS; [D,A,L,MA-DE,MR,RPM]. Xi, J., PE 3544

STROKE VOLUME


TEAM SPORT

SELECTION, ATHLETE, SATISFACTION, APPLIED BEHAVIOUR ANALYSIS, QUESTIONNAIRE, COMPARATIVE STUDY; [D,J,Q-DE,FA,RC]. Neu, L., PSY 1786

UMPIRE

BASEBALL, PROFESSIONAL PREPARATION, PERFORMANCE PREDICTION, DEMOGRAPHY, SOCIOECONOMIC FACTOR, PERSONALITY INVENTORY, COMPARATIVE STUDY; [D,J,Q-DE]. Robertson, S.A., PE 3535

Volleyball

PASSING, OVERHEAD, EVALUATION, INSTRUMENTATION, TEST RELIABILITY; [D], TC-DE,AV,RC,RE,T]. Higgins, K.L., PE 3511

TEACHING, VERBAL FEEDBACK, PERFORMANCE PREDICTION, ADOLESCENT, GIRL, COMPARATIVE STUDY; [E,O-DE,AC,G,%]. Pellett, T.L., PE 3529

Walking

TREADMILL, POWER POLES, AEROBIC CAPACITY, HEART RATE, ENERGY EXPENDITURE, FIELD TEST, COMPARATIVE STUDY; [D,A,L-DE,AV,RE,TE]. Hendrickson, T.L., PH 1392
INDEX

Antshel, K.M. PSY1763 .................. 40
Audet, D. PH1370 ....................... 14
Bacon, H. PH1371 ....................... 14
Ball, T.C. PH1372 ....................... 14
Bergerson, M. PH1373 ................... 15
Bickum, B.D. PH1374 ................... 15
Bocket, T.J. PSY1764 ................... 34
Boge, J. PSY1765 ........................... 41
Braiden, RW. PH1375 ..................... 15
Brannan, T.L. PSY1766 .................... 42
Byrd, B.J. HE539 ............................ 28
Cambridge, L.A. PE3505 ..................... 4
Casey, K.M. PH1376 ....................... 16
Castille, C.L. RC478 .......................... 31
Cherrington, K.Y. PSY1767 ................ 42
Chron, S. PSY1768 ........................... 35
Chung, P.K. PSY1769 ........................ 41
Cleary, M.A. PE3506 ....................... 8
Cofrancesco, L. PSY1770 ................... 35
Cooper, T.K. PH1377 ........................ 16
Cottrell, S.P. PSY1771 ..................... 35
Couch, L.C. PH1378 ........................ 16
Cramer-Hamman PSY1772 ................... 36
Danner, T. PH1379 .......................... 17
Dauley, P.A. PH1380 ....................... 17
Dinschel, K.M. PH1381 ..................... 17
Dornemann, T.M. PH1382 .................. 18
Ellis, M.K. PH1383 .......................... 18
Flint, M.O. PSY1773 ....................... 36
Foley, T.S. PH1384 .......................... 19
Foran, J.F. PH1385 .......................... 19
Frank, L.B. HE540 ........................... 28
Frey, B. PH1386 ............................. 19
Gagalis, Z. HE541 ........................... 28
Galley, S.L. PE3507 .......................... 9
Gappmaier, E. HE542 ........................ 29
Garcia, S.C. PH1387 ........................ 19
Gentile, D. PSY1774 ........................ 43
Gorman, M.E. PE3508 ....................... 18
Gow, A.J. PH1388 ............................ 20
Greenberg, D.L. PSY1775 .................... 33
Griffith, J.B. PSY1776 ...................... 34
Groves, M.D. PE3509 ........................ 9
Guion, W.K. PH1389 ....................... 20
Han, D.H. PH1390 ........................... 20
Harms, C.A. PH1391 ........................ 20
Hart, E.A. PSY1777 .......................... 36
Hayashi, K.T. PSY1778 ........................ 38
Hendrickson, T.L. PH1392 ................... 21
Hendrickson, W.R. PSY1779 ................... 39
Hickey, K.P. PE3510 ....................... 2
Higgins, K.L. PE3511 ........................ 2
Holliman, S.C. PH1393 ...................... 21
Honey, M.J. PE3512 ........................... 2
Hubball, H.T. HE543 .......................... 29
Hunt, B.R. PH1394 ........................... 21
Huntington, M.W. PE3513 ................... 3
Ienna, T.M. PH1395 .......................... 22
Irwin, M.L. PE3514 ........................... 9
Jefferson, L.M. PE3515 ...................... 6
Johnson, B.M. PH1396 ........................ 22
Jordan, M.C. PH1397 .......................... 22
Jorgensen, A.G. PE3516 ........................ 10
Kano, M. PH1398 ............................. 23
Kelland, J. RC479 ............................. 31
Kelly, K.P. PH1399 ........................... 23
Kennington, A. HE544 ........................ 30
Kilbourne, J.R. PE3517 ........................ 3
Kilmer, K.J. PSY1780 .......................... 43
Knox, K.M. PH1400 ............................ 23
Koabel-Bagley, P. PE3518 ........................ 10
Kocher, P.L. PH1401 ........................... 23
Kuramoto, A.K. PH1402 ........................ 24
LaBranche, M.J. PE3519 ........................ 6
Lamb, J.A. PH1403 ............................ 24
Lee, S.H. RC480 ............................... 31
Leonard, A.C. PSY1781 .......................... 44
Lloyd, G.S. RC481 ............................. 32
Lucas, J. PSY1782 .............................. 41
Lutter, C.D. PSY1783 ........................... 34
Lynes, L.K. PH1404 ............................ 24
Macpherson, K. PE3520 ........................ 10
Mahler, E.B. PE3521 ............................ 11
Mandell, R.A. PSY1784 .......................... 41
Manzo, L.G. PSY1785 ........................... 37
Marks, M.A. PE3522 ............................ 11
McCrea, D.M. RC482 ............................. 32
Meiners, E.P. PE3523 ............................ 7
Miller, R.D. PE3524 ............................ 4
Morales, A.D. PE3525 ............................ 12
Mortell, R. PE3526 ............................ 12
Nelson, L.H. PE3527 ............................ 12
Norton, R. HE545 .............................. 30
Ojuh, E.O. PH1405 ............................ 25
Olpin, M.N. PSY1787 ........................... 38
Papachatzis, T. PE3528 ............................ 6
Pellett, T.L. PE3529 ............................ 3
Pethan, S.M. PH1406 ........................... 25
Ploeger, R PE3530 ............................... 13
Pope, E.M. PE3531 .............................. 1
Porter, S.T. PE3532 .............................. 7
Quinn, R.W. PE3533 .............................. 1
Ramsay, M.C. PSY1788 ........................... 43
Ritzer, C.L. PH1407 ............................ 25
Rivers, D.A. PE3534 ............................ 13
Robertson, S.A. PE3535 ........................... 4
Rock, J.A. PH1408 ............................. 25
Rockhill, B.H. PE3536 ............................ 13
Roncesvalles, M.N. PSY1789 ........................ 40
Ryan, P.T. PH1409 ............................. 26
Sabo, J.M. PE3537 ............................. 13
Schimmel, K.S. PE3538 ............................ 5
Schoen, C.H. PSY1790 ........................... 38
Seid, B.S. RC483 ............................... 32
Shea, K. PH1410 ............................... 26
Short, K.R. PH1411 .............................. 26
Smith, J.B. PSY1791 ............................ 39
Smith, L.J. PE3539 .............................. 1
St. John, K. PE3540 ............................. 4
States, R.A. PE3541 ............................. 7
Stemmler, J.D. PE3542 ............................ 7
Stroano, A. PH1412 ............................ 27
Stuler, L.R. PSY1792 ............................ 42
Sveistrup, H. PSY1793 ............................ 40
Tally, E. PSY1794 .............................. 39
Thomas, A.C. HE546 ............................ 30
Thomas, T.R PH1413 ............................. 27
Tsoa, E.S. RC484 ............................... 33
Underwood, L.S. HE547 ............................ 30
Viteri, J.E. PSY1795 ............................. 38
Vorhis, P.E. PH1414 ............................. 27
Wartluff, E.M. PE3543 ............................. 4
Waskiewicz, B.A. RC485 ............................ 33
Xi, J. PE3544 ................................. 8
Yang, C. PSY1796 .............................. 44
Yu, J.W. PE3545 .............................. 5
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