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HEALTH, PHYSICAL EDUCATION, RECREATION, AND EXERCISE AND SPORT SCIENCES

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BULLETIN 11, 1

This publication is the first issue of Bulletin 11. The bulletin represents microfiche published in April 1998. Previously, bulletins were published every 5 years, except for Bulletin 7, which covers two and a half years. Beginning with Bulletin 8, there are two issues (nos 1 and 2) per annual bulletin. Each issue includes a section of thesis and dissertation titles and abstracts, as well as a section of keywords. Bulletin 11, 2 will appear in October 1998.

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The price of each title in this bulletin is indicated in parentheses at the end of the title listing. The price includes the library catalog card for the title. All titles have proper catalog headings, including both Dewey Decimal and Library of Congress classification numbers, as well as subject headings chosen from the Library of Congress Subject Headings.

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- **RC** Recreation and Leisure
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PART I: TITLES AND ABSTRACTS

The abstracts are reproduced as provided by the authors in their dissertations. They were not edited for uniformity of style.

PHYSICAL EDUCATION

ADMINISTRATION

Dickerson, Thomas A. *Developing an activity conference at the middle school level*, 1997. M.A., Ball State University (Marilyn Buck). (43pp 1f $4.00) PE 3789

The purpose of this project is to establish an activities conference for Wawasee Middle School in Syracuse, Indiana. The objective of establishing a conference is to promote goodwill and better understanding between administrative and extracurricular personnel. The conference will also achieve a joint approach to problems common to all member schools. Nine schools were invited to join the conference. All schools were invited to attend a special interest meeting in January of 1996. All schools attended and presented the positives and negatives for their school joining such an alliance. After the January meeting, one school dropped out because the enrollment figures of the other schools were too high. They did not feel they could be competitive in such a conference. After a meeting in February 1996, two other schools dropped out, stating that administrators at a high level would not approve of them being in a middle school conference. At the March 1996 meeting, the remaining six schools all agreed to establish an alliance together for the 1996-97 school year. Each school met monthly in April, May and June and developed a constitution and guideline handbook for all of the schools to follow. The conference name, objectives, membership procedures, election of officers and voting procedures were all written into the constitution. General guidelines and individual sport guidelines were all documented in the guidelines handbook. In June of 1996, all member schools received approval from all of their principals and superintendents at a luncheon held in Warsaw, Indiana. In September of 1996, the Northeast Lakes Middle School Activity Conference was established and played its first conference competition.

Empey, Michael D. *An investigation of the career mobility patterns of National Football League head coaches*, 1997. M.S., Brigham Young University (Barbara Day Lockart). (64pp 1f $4.00) PE 3831

This research examined the career mobility patterns of the National Football League’s head football coaches for the 1995-96 season. Career profile sheets were requested from the public relations office of each franchise in the NFL. Data was gleaned and charted on a data collection sheet. The data gathered included information pertaining to playing experience, coaching experience, career mobility, and demographics. The results revealed the following: all of the subjects (n=30) played college football and 50% of them played professional football, the majority of the coaches 20 (66%) were assistants at the collegiate level, those who played professional football rose to their head coaching positions on the average of 7.8 years faster than those who did not, 40% of the 15 coaches who played professional football began their coaching careers in the NFL with a team that they played for, the average number of job changes before their current job’s is 3.26 (s=1.73), the average age for each coach at their first NFL head coaching job was 44.5 years old (s=7.01), and the average age of NFL head coaches currently is 51.7 years old (s=8.4).

Gibbs, E. Nathan *Career mobility patterns of head coaches in the National Basketball Association*, 1997. M.S., Brigham Young University (Courtney Leishman). (65pp 1f $4.00) PE 3838

This research examined the career mobility patterns of the National Basketball Association’s head basketball coaches for the 1996-97 season. Career profile sheets were requested from the public relations department of each NBA franchise. The data taken from the profiles of each head coach included information pertaining to playing experience, coaching experience, career mobility, and demographics. The results revealed the following: Twenty-eight of the subjects (n=29) played college basketball with 15 of them fulfilling careers in the NBA. Coaches with NBA playing experience followed a more direct route to their first head coaching position in the NBA. They experienced an average of only 2.4 job changes before obtaining their first head coaching position in the NBA while those coaches without NBA playing experience changed jobs an average of 4.29 times before achieving their first head coaching position at the same level. Ten of the 15 (66.67%) coaches with NBA playing experience obtained their first head coaching position with a team they had played for in the NBA.
This study described the gymnastics coaching qualifications of the current private gymnastics coaches in Utah. A survey was delivered to the owners of seventeen private gymnastics facilities to be distributed to their coaching staffs. Of the 150 surveys delivered, 109 were returned to the researcher. The survey included questions concerning the coaches’ age, gender, gymnastics experience, formal education, and coaching experience. The results of this study indicated the need for a gymnastics coaching certification program. The data shows the many problem areas that currently exist in the gymnastic coaching community in Utah.

Overton, Reginald F. An analysis of the processes used by athletic directors to evaluate the head coaches of men’s and women’s basketball teams at National Collegiate Athletic Association Division I, II and III colleges and universities in Pennsylvania, 1997. Ed.D., Temple University (Michael W. Jackson). (361pp 4f $16.00) PE 3820

The purpose of this study was to determine which processes were used by athletic directors to evaluate the head coaches of men’s and women’s basketball teams at National Collegiate Athletic Association (NCAA) Division I, II, and III colleges and universities in Pennsylvania and to determine if there were differences in perception between athletic directors and coaches in how coaches were evaluated. A 39-item questionnaire was developed by the investigator and mailed to 65 athletic directors, 65 head men’s basketball coaches, and 65 head women’s basketball coaches. It was found that 27 out of the 39 total criteria had significant differences in response between athletic directors and head coaches. The largest differences were found in criteria that pertained to win-loss record, coaching effectiveness, public relations, recruiting, student-athlete evaluation participation, and whether external evaluators participated in the evaluation. The results of this study confirmed there was a lack of agreement between athletic directors and head coaches as to which processes are used and should be used to evaluate the head coaches’ performance. A lack of communication between administration and coaches as to what methods of evaluation are used and should be used was found to be a major issue. In addition, there was no evidence supporting the use of a formal evaluative instrument for evaluating head basketball coaches. Specific differences in perception between athletic directors and head coaches were found in each of the four main areas of the questionnaire: 1. What criteria should be used to evaluate coaches? 2. Who should be involved in the evaluation? 3. When should coaches be evaluated? 4. What methodologies should be used in the evaluation?
Stucky, Amy M. *Impact of CAAHEP accreditation on the internship route to national certification in athletic training at NCAA III and NAIA colleges and universities*, 1998. M.S., Ball State University (Thoma G. Weidner). (44pp 1f $4.00) PE 3827

The purpose of this study is to determine the perceived impact of CAAHEP accreditation on athletic training internship routes among athletic trainers in the NCAA 111 and NAIA divisions. Ten Athletic Trainers from NCAA 111 and NAIA institutions offering internship routes in athletic training were interviewed using a questionnaire developed for this study. A majority felt that if the internship route was eliminated, it would have a negative effect on their athletic training programs. Alternative actions were suggested for institutions not able to accommodate accreditation standards such as: increased work study budgets, consortiums with accredited institutions, and Pre-athletic training programs. Institutions offering the internship route will be affected by its elimination. This will dictate that programs reorganize and develop innovative ideas to meet accreditation demands and provide adequate athletic training coverage to the athletes. Additional research should continue to evaluate the accreditation process during the transition stages.

Tinkess, Jeanne S. *How to organize a fundraising golf tournament*, 1997. M.A., San Jose State University (Richard A. Montgomery). (126pp 2f $8.00) PE 3841

Fundraising has increasingly become an integral part of many organizations. These organizations range from small non-profits, to municipal recreation agencies, to colleges and universities, to large corporations. All have the common thread of declining financial resources and the desire to tap into new sources of income. A fundraising golf tournament can be a fun, unique, and financially rewarding venture. The purpose of this project was to develop an operations manual based on the principles of management to assist in coordinating, marketing, and executing a fundraising golf tournament.

Torns, Jennifer *An examination of the “Friends of Carolina” fundraising organizations at the University of North Carolina at Chapel Hill*, 1997. M.A., University of North Carolina-Chapel Hill (John Billing). (61pp 1f $4.00) PE 3839

This study provided a descriptive analysis of the fourteen “Friends of Carolina” fund raising programs at the University of North Carolina. The study addresses the reasons for club development as well as the success each club has achieved. The most valued club benefits were identified through the perceptions of the head coaches. In addition, methods and techniques for raising money, through the use of the “Friends” clubs, were ranked according to their success levels. The most significant reason for starting a “Friends of Carolina” club was to raise money for the sport program. The “Friends” club provided an excellent method for keeping alumni involved with the program. Average club membership was from eighty to one hundred members. This study will be a resource for any club or organization that may be considering the use of booster clubs.


The purpose of this study is to assess and describe the racial composition of specific player positions—quarterback, center, offensive guard, running back, defensive back and wide receiver—and the underlying factors that impact players’ opportunities at each position in the National Football League for the 1995-1996 season. The expansion of the National Football League to 30 teams and the inclusion of other minorities will enable the researcher to analyze trends and patterns that may have hindered Blacks in gaining leadership positions in the National Football League in the past. The study will consist of 1,590 subjects in the National Football League during the 1995-1996 season. The study will follow Williams’ and Yousser’s (1979) study on race and position assignment in professional football. The data will be analyzed by descriptive statistics that will determine the percentages of each racial group that occupies central and non-central positions in the National Football League.

**HISTORY AND PHILOSOPHY**


This study provided an historical examination of experiences of Eastern Washington University African-American Athletes, as well as their Coaches, and Athletic Directors. The interviewees all attended Eastern during the 60’s and 70’s. Three African-American players, four coaches who coached them, and three Athletic Director’s were interviewed in the study. This study examines how African-American athletes at Eastern were influenced by other African-American athletes or leaders from the 60’s through the early 70’s. The study also investigates whether or not the Cheney Community was directly affected by these changes that occurred in the 60’s through the early 70’s. This study shows that Eastern Washington University was directly affected by the civil unrest that was occurring in the United States. This study also identified many protests which took place at Eastern, and one in particular a clinched fist incident that rivaled Tommie Smith’s and John
Carlos clinched fist in the 1968 Olympic games in Mexico. There is evidence in this study that there were some racial tensions throughout the 60’s and 70’s, which Coaches, and Athletic Directors had to deal with.

Sather, Brian A. *The development of interscholastic sports at Seventh-Day Adventist academies and colleges*, 1996. M.S., Brigham Young University (Barbara D. Lockhart). (117 pp 2f $8.00) PE 3803

The purpose of this research was to study the inclusion of interscholastic sports in Seventh-day Adventist (SDA) schools. Since the inception of Adventist education in 1874 the debate over the place of interschool sports has escalated. The current stance of the governing body of the SDA church toward interschool competition states it is opposed to interschool league play commonly known as varsity athletics. The study by the researcher found 49 of 92 (53%) Seventh-day Adventist academies and colleges in the United States compete against non-SDA schools. Athletic directors at schools with interscholastic sports most frequently cited school spirit, witness opportunity, and opportunity for students to develop physical gifts as advantages of sports at their school. The author concluded that wholesome physical activities are consistent with doctrines of the SDA church and the writings of the prophetess Ellen G. White. Because of the advantages of interscholastic sports and the ambiguity of the current church statement, the SDA church should revise the current policy to one that sanctions sports programs that develop proper Christian values in SDA education. With the church’s support of the schools, standards and guidelines can be developed to provide proper direction to all SDA schools who wish to participate in organized athletics.

**PEDAGOGY**

Bolt, Brian R. *The influence of case discussions on physical education preservice teachers’ reflection in an educational games class*, 1996. Ph.D., University of North Carolina-Greensboro (Mary Lou Veal). (224 pp 3f $12.00) PE 3785

The purpose of this study was to investigate and describe the influence of case discussions on physical education preservice teachers’ reflection in an elementary educational games course. Reflection was defined as both skill and will. The skill of reflection included the ability to identify problems and generate solutions (flexibility) while drawing on relevant concepts or personal experiences (connectedness). The will of reflection included a desire to keep conclusions tentative for continued learning (viewing teaching as problematic) and a willingness to evaluate personal beliefs about teaching based on new information. Participants were 12 preservice teachers enrolled in an elementary educational games course. Three narrative cases containing compelling stories about elementary physical education were discussed in the middle of the course by the course instructor/researcher and the preservice teachers. Multiple measures of preservice teachers’ reflection skill and will were taken prior to and after the case discussions. Quantitative and qualitative data were used to describe the influence of the case discussions on preservice teachers’ reflection. Data included a pre-and-post reflection orientation questionnaire, written reflections on physical education lesson episodes, and post metacognitive interviews. To assess their reflective skill, preservice teachers were divided into groups based on their initial orientations toward reflection (high-reflective, middle-reflective, low-reflective). Written reflections completed before and after the case discussions on the same lesson episodes were analyzed and compared. All three groups improved in their reflective skill (flexibility, connectedness) on the post-written reflections. Supporting the numerical results, interview data revealed that students used course content (52%) and topics raised in case discussions (31%) to reflect on the post-lesson episodes. Students also found the cases to be interesting, relevant, and thought provoking. Pre-and-post questionnaires and interview data were used to profile cases of students based on reflective will (viewing teaching as problematic, perceived meaningfulness). Four students were classified as oriented toward reflection at the end of the elementary educational games course. These students were contrasted with four who were classified as non-reflectively oriented at the end of the course. Connections between students’ reflection orientations (will) and the case discussions are explored.


An illustrated guide was developed for certified scuba instructors to train divers with special physical needs. The guide focused on practical information for the instructor to use in both the classroom and confined or open water environments. Physical disabilities highlighted in the manual included: spastic cerebral palsy, bilateral amputation at the hip with colostomy, and spinal cord injury with resulting quadriplegia/paraplegia. Topic areas covered in the guide fell into seven major categories: (a) etiquette, (b) medical aspects, (c) teaching techniques, (d) equipment, (e) wheelchairs, (f) program development, and (g) facilities. The finished product was reviewed for technical merit and content by a panel of experts with backgrounds pertinent to adapted scuba and/or use of instructional guides. The manual was found to be of “good quality” based on evaluation surveys, and test scores of the experts on the material improved significantly after reading the guide.
This study determined the status of career preparation of college and university students who major in physical education. The survey for this study was completed by the junior and senior students of physical education department at eight colleges and universities in Seoul, Korea. Sixty five women and 47 men responded for an over-all return of 92%. Descriptive statistics were used to analyze the data. The results of this study indicated: 1) 60.7% of physical education students planned to enter the job market after college graduation; 2) only 43% of the students felt a strong relationship existed between their major and their future work; 3) most physical education students were gathering employment information passively from friends and parents rather than using professional information sources; and 4) physical education courses were of little benefit for career preparation. Results of this study suggest that departments of physical education need to educate students about career choices and career planning. Further study is needed to determine the role of minor courses in career preparation.

Preece, Lisa A. A comparison of two methods of teaching volleyball: skill teaching, with game and equipment modifications, and mastery learning, 1996. M.S., Brigham Young University (Joyce M. Harrison). (93pp 1f $4.00) PE 3808

This study examined the effects of skill teaching and mastery learning on volleyball achievement and task-specific self-efficacy for high- and low-skilled learners. Skill teaching used modified games, adapted equipment, and detailed content progressions. Mastery learning used formative tests, “correctives” and “enrichments” to achieve specified objectives. Participants included 182 students in six intact beginning college volleyball classes. Three instructors each taught one mastery learning and one skill teaching class. The AAHPERD pass, set, and serve tests were used to assess learning. Bandura-type self-efficacy scales and a knowledge test assessed sport-specific self-efficacy and knowledge of rules, techniques, and strategies. A random coefficients growth curve model, used to analyze the intercepts and slopes of the learning curves, revealed significant improvement from pretest to posttest on all skills tests and on self-efficacy for each skill (p < .0001). No significant difference existed between skill teaching and mastery learning on the rate of learning for the forearm pass, serve, or spike, on the rate of change in self-efficacy, or on the knowledge test scores. The rate of learning for the set was higher for the mastery group (p < .0002). Low-skilled students improved in self-efficacy at a faster rate than high-skilled students. A good teacher using either of the two styles can positively affect student learning.

Tan, Steven K.S. Student teachers’ perspectives: from theory to practice, 1995. Ph.D., University of Georgia (Paul G. Schempp). (194pp 2f $8.00) PE 3840

The purpose of this study was to describe and analyze the impact of a physical education teacher education course and student teaching experience on prospective teachers’ perspectives. Four prospective physical education teachers were observed and interviewed from the beginning of a physical education teacher education (PETE) course through 10 weeks of student teaching. Interviews were also conducted with course instructor and cooperating teachers. Data were analyzed using inductive analysis and constant comparative coding. To assess the sources of influence related to the development and changes of teachers’ perspectives, data were analyzed in three sections: (a) prior to course, (b) after course, and (c) after student teaching. The analysis of teaching perspectives included beliefs about the purposes of school and physical education, teacher’s role, student learning, curriculum development, and several teaching tasks (i.e., organization, instruction, management, motivation and evaluation). The finding indicated that different socializing agents, events and experiences played different roles in shaping the teachers’ perspectives during anticipatory socialization, PETE course, and student teaching. What are more important, the teachers/coaches and physical activity experiences that were critical in helping the teachers formulate their perspectives remained as major sources of influence during the course, and even after student teaching. Even though the PETE course introduced to teachers a set of different socializing agents and events, the course had limited influence on changing teachers’ perspectives. However, through role-playing activities related to instruction, the teachers experienced alternate teaching styles that seemed plausible for them to adapt and adopt into their perspectives. All other dimensions of teaching perspectives remained unchanged after the course. During student teaching, cooperating teachers and students primarily helped to validate and reinforce teachers’ perspectives formed during anticipatory socialization and remained intact after the PETE course. Cooperating teachers acted as excellent role models in both their interpersonal relationships with students, and their instructional practices. Various events and experiences involving diverse students, institutional forces and individual intent interacted to provide learning opportunities for these teachers to test, adapt or modify their perspectives. The four dimensions that underwent the greatest perspective changes are curriculum development, and teaching tasks pertaining to organization, management and motivation.

Trilling, Paul F. A survey of lead physical education teachers’ perceptions of the impact of block scheduling on curriculum and instruction, 1997. M.S., University of Wisconsin-LaCrosse (Jeffrey Paul Steffen). (95pp 1f $4.00) PE 3835
Physical education teachers (N=81) in public and private secondary level educational institutions in Wisconsin were surveyed to determine perceptions of the impact of block scheduling on curriculum and instruction. The survey consisted of 5 demographic variables, 14 five-point Likert-type scale statements, and an optional part consisting of 4 open-ended questions. A response rate of 73% (n=59) was obtained; 66% (n=39) for all 3 parts of the survey, 3% (n=2) for the first 2 parts, while 31% (n=18) returned it incomplete. Zero-order correlation tests were performed between the Likert-type scale statements and demographic variables. Results indicated that the relationship between PE teachers changing their instructional methods and length of class periods was significant (p<.047), as was the relationship between PE teachers introducing more in-depth content and length of class periods (p<.045). All other relationships were not significant (p>.05).

**SOCIOLGY AND CULTURAL ANTHROPOLOGY**

Depatie, Caroline *Employment equity in Canadian newspaper sports journalism: a comparative study of the work experiences of women and men sports reporters*, 1997. M.A., University of British Columbia (Robert Sparks). (150pp 2f $8.00) PE 3787

There is continuing evidence that North American newspaper sports departments are under pressure to rethink the contents of their sports pages as part of an overall strategy to gain larger readerships and rebuild their revenue base which eroded during the last recession (Sparks, 1994). Rambo (1986) has noted that some sports departments in the United States have hired more women sports journalists as a strategy to appeal to women readers and expand thereby their section readerships and potential advertising income. However, as reported in the literature, the overall number of women sports journalists working in major daily newspapers remains low. Women represent approximately 9% of the total work force of newspaper sports reporters in the United States (Eberhard & Myers, 1986) and 4.3% in Canada (Sparks, 1991). In addition to being under represented, women working in sports journalism often face discrimination on the job. This discrimination is, for example, revealed in a lack of high profile assignments and in difficulties with accessing senior editorial ranks (Eberhard & Myers, 1988; Creedon, 1994). This thesis investigated the work environment in Canadian daily newspaper sports and promotion opportunities on women and men sports reporters respectively. Data was collected through a national survey. Questionnaires were sent to all women sports reporters (N=21) working full-time in a Canadian daily newspaper and to all men sports reporters (N=134) working full-time in a Canadian daily newspaper that employed one or more women sports reporters full-time. Questionnaires were also sent to all sports editors (N=106) working for a Canadian daily newspaper. Separate questionnaires were designed for sports reporters and for sports editors. For sports reporters a total of 88 questionnaires (56.8%) were completed and returned, 16 (76.2%) from women sports reporters and 72 (53.7%) from men sports reporters, for a total response rate of 56.8%. The information obtained from sports reporters was first analyzed as a whole and then analyzed with a matched sample. The matched sample included all women sports reporters who had responded (n=16) and an equivalent selected number of men sports reporters. The information obtained from sports editors was used to support the findings from the sports reporters. Four major themes emerged from the data analyses of the matched sample. First, the nature of the assignments and the visibility of the work was different for women and men sports reporters. Women sports reporters covered less prestigious assignments, published 17 articles less per month than their male peers, and a significantly higher number of women than men (p=.0170) agreed to covering more women’s sports than their male peers. Second, there was a lack of opportunities to advance in the field of sports journalism and for women working in sports journalism. Although, the opportunities to advance in the field of sports journalism were limited, significantly (p=.0281) more women than men respondents tended to think that women did not have the same opportunities to advance in the field than their male peers. Third, sports journalism was male dominated and women and men sports reporters tended to belong to different networking groups. No woman was affiliated with a professional sports association. Fourth, although women reporters were unhappy with a number of things, they would still be willing to become reporters again. Over 50% (n=8) of them were not satisfied with issues surrounding career advancement, working schedule and work assignments. However, seventy percent (n=12) of them said they would choose to become sports reporters if they had to decide again.

**DANCE**

Allen, Heidi *Stages of motif writing development in third grade children*, 1996. M.A., Brigham Young University (Pat Debenham). (106pp 2f $8.00) PE 3816

This study defined the stages of motif writing development that were apparent in a class of third grade students learning motif writing. The analysis of the developmental stages was based on creative dance instruction modeled after Whole Language philosophy and methodology. Analysis of the students’ journal entries defined the developmental stages that were apparent in a class of third grade students after Whole Language philosophy and methodology. The analysis of the developmental stages was based on creative dance instruction modeled after Whole Language philosophy and methodology.
tal patterns of motif writing. The study showed that all 24 students demonstrated significant progress in learning motif writing. The case study analysis revealed that the reading and writing skills and the ability to discipline behavior did affect the extent of growth in motif writing development. The application of Whole Language principles (experiential learning, reading for meaning, model writing and inventive spelling) were advantageous to the study as they expanded the students' understanding, enhanced observation skills, clarified assignments, and allowed for symbol approximation.

Bastian, Becca Sacred ground: the choreographic exploration of a rite of passage, 1996. M.A., Brigham Young University (Pat Debenham). (77pp 1f $4.00) PE 3801

As functional and expressive imitations of life, ritual and the arts are uniquely connected. Ritual provides man with a sense of order in the midst of continuously shifting chaos. Artistic expression allows man to assign individual meaning to universal experience. A rite of passage is a ritual which acknowledges the transformation of an individual or community, and provides order during the chaos which occurs during a transformation. The purpose of this thesis was to choreograph a work which demonstrated an abstract application of the elements and phases of a rite of passage. These elements and phases were drawn from the anthropological theories of Arnold van Gennep and Victor Turner. The translation of the elements and phases into dance was assisted by research of modern dance choreographers Katherine Dunham, Anna Halprin, and Kei Takei. The work was performed on January 19 and 20, 1996, and was successful in its attempt to portray the phases and various characteristic elements of a rite of passage.

Christensen, Karen Implementation of religious symbols in a choreographic work: the revelation of John, 1996. M.A., Brigham Young University (Cathy Black). (97pp 1f $4.00) PE 3800

Select religious symbols from the Book of Revelation were choreographed into moving visual images. The “Revelation of John” was presented in concert to demonstrate how symbolism may be used to strengthen choreographic intent. I desired to see if there would be a heightened awareness of and motivation to study the Book of Revelation. A brief survey was distributed at the concert to determine audience cognitive and emotional responsiveness to the choreographic work and the results have been documented. The majority of the audience survey responses demonstrated that the images perceived were in accord with the choreographic intent. Also, the audience majority desired to further their study of the Book of Revelation and experienced a heightened spiritual awareness. Dance as an art form not only has the ability to elicit a strong emotional response but the teaching aspect seems to be a powerful way to communicate meaning and awareness of religious themes as demonstrated through the success of this choreographic work.

Gorman, Kathleen Recommendations for the process of producing an initial season of The Nutcracker ballet, 1997. M.A., Brigham Young University (Catherine H. Black). (154pp 2f $8.00) PE 3836

This thesis presents recommendations for the process of producing an initial season of The Nutcracker ballet because of the lack of such information for first-time producers of the ballet. Information was assimilated concerning the production elements—scenario, choreography, auditioning and casting, costuming decor, publicity, and fund-raising. Production versions of The Nutcracker ballet were researched including the original 1892 Maryinsky Theatre production. Information was gathered through questionnaire surveys of 13 American dance companies plus my company, The La Crosse Dance Center, concerning their initial productions of The Nutcracker ballet. Information on the production elements was critically analyzed and presented in recommendation form to guide those producing the first season of The Nutcracker ballet. (For reference, a video of The La Crosse Dance Center’s 1990 initial production of The Nutcracker ballet is available through the Brigham Young University Department of Dance.)

Holman, Curt W. American social dance technique syllabus for the rumba, samba, mambo, and tango, 1996. M.A., Brigham Young University (Phyllis C. Jacobson). (135pp 2f $8.00) PE 3826

This thesis created a technical syllabus to explain in detail the correct method of dancing the school figures taught at the gold level in the American social dance program at Brigham Young University. The dances chosen to research and analyze were rumba, samba, mambo, tango. The syllabus assists students in preparing for their medal examination at the Gold Level, and serves as a guide for teachers who are teaching the material. Perhaps the greatest benefit of this syllabus is to help preserve the technique in a written format and to protect it against misinterpretation which eventually leads to dilution of its original form. The areas of analysis include rhythm, foot placements, alignment, amount of turn, and footwork. The method of notation follows the format sanctioned by the Imperial Society of Teachers of Dance.

Hughes, MaryBeth The search for feminine form: a performance work in progress, 1996. M.A., Brigham Young University (Cathy Black). (82pp 1f $4.00) PE 3824

This thesis explores the process of discovering a feminine aesthetic structure using movement, music, dramatic text, and visual images. The process resulted in a performance
entitled “A Stop Along the Way” presented to an invited audience. Using the study of pre-patriarchal societal structures, feminist speculation and examples within Western history of dance, theatre, and art forms, plus an examination of women working with feminine form, a description of characteristics was created. The exploration of these characteristics fostered a personal transformation and a deeper and more dimensional understanding of feminine form. The weaving of intuitive movement improvisations, emotional insights, and archetypal images was presented to a small group of witnesses/participants. The performance piece did demonstrate a majority of listed characteristics of feminine form. A video of the final performance is on file in the Dance Department Office.

Russell, Marsha Images of the Renaissance: an original classical ballet, 1997. M.A., Brigham Young University (Sandra B. Allen). (70pp 1f $4.00) PE 3804

This thesis was a choreographic work within the genre of classical ballet which emphasized two important aspects of dance in the Renaissance: courtship and manners. The dances, music, clothing, and architecture of the Renaissance influenced the choreographer's choice of movement, music, costume design, and scenery. Although not a reconstruction of Renaissance dances, the work included balletic versions of dances dating from 1550 to 1650 including the branle, passepied, basse danse, pavanne, gavotte, mazurka, coranto, and volta. The music used in this work was by Michael Praetorius (1612) and Peter Warlock (20th century). Just as Warlock used Renaissance tunes and expanded upon them by adding rich orchestration, contemporary sounds, and rhythms, the choreographer took Renaissance dances and embellished them by adding rich, balletic movement.

Scheel, Dana Potts Dancers in the dark: implementation of dance movement instruction on five visually-impaired female adults in the Salt Lake and Utah County areas, 1996. M.A., Brigham Young University (Sara Lee Gibb). (144pp 2f $8.00) PE 3802

This thesis investigated the effects of dance movement instruction on the self concept and motility of five blind female adults living in the Salt Lake and Utah County areas during the year 1995. The study involved five participating dancers and five control group members. The subjects were instructed twice a week for 10 weeks. This study was validated by pretests and posttests from the Tennessee Self Concept Scale and a self-evaluation motility survey concluding with a final discussion by the class which was taped on video. Seven dance classes were videotaped by an assistant. Dance movement instruction was effective on five visually-impaired female adults in the Salt Lake and Utah County areas. The participants improved their self concept and motility. The test group increased in every area far beyond the control group's results.

Stoddard, Lisa A choreographer's journey into the world of Dr. Seuss, 1996. M.A., Brigham Young University (Catherine H. Black). (86pp 1f $4.00) PE 3843

For this thesis I choreographed a dance piece that captured the flavor of Dr. Seuss's literature and illustrations incorporating and developing the elements of nonsense, encounter, rhythm, rhyme, repetition and caricature inherent in his works. Choreography was an abstract interpretation of four Dr. Seuss books that were chosen, to emphasize specific elements. Though all elements that were chosen for this thesis were seen within the whole piece, each section within the piece emphasized specific elements. A video of the choreographed work is on file in the Brigham Young Dance Department Office. Formative evaluation concentrated on the process and was used to keep the choreography focused to capture the flavor of Dr. Seuss. Summative evaluation determined how well the presentation succeeded in capturing the flavor of Dr. Seuss. The audience agreed that it did. The thesis committee determined that as a whole the piece did capture the flavor of Dr. Seuss, though when divided into sections, the second section, “The Butter Battle Book,” did not capture the flavor as strongly.

BIOMECHANICS

Allen, David M. A kinetic and kinematic comparison of the grab start and track start in swimming, 1997. M.S., University of Wisconsin-LaCrosse (Marilyn K. Miller). (56pp 1f $4.00) PE 3815

Fifteen collegiate swimmers (8 females, mean age=18.38, 7 males, mean age=19.43) volunteered as subjects to determine differences between 5 kinematic variables and 2 kinetic variables using the grab start and track start. Subjects attended a 1 hour practice session, completing a minimum of 15 starts of each technique. Subjects were videotaped performing 14 trials of each start technique. Force data were collected from the last 5 trials of each technique. A MANOVA revealed the grab start had a significantly (p<.05) longer flight distance for all subjects. Subjects who preferred the grab start achieved 13.1% increase (normalized to body height) in flight distance with the grab start, while subjects preferring the track start had a 9.6% increased flight distance with the grab start. A significant difference (p<.05) was also found between the preferred starting technique and the absorption force (AFz) in the vertical direction. This force was attributed to the back leg pushing against the block during this time period. Male subjects who preferred the track start had a signifi-
cantly (p<.05) faster start time for the track start than males who preferred the grab start. No other significant differences were found between any other variables. Further investigations on different populations would allow the results to be more generalized. More practice sessions should also be completed to decrease the effect of learning on the performance of the start techniques.


Standing balance depends upon the interaction between muscular and non muscular forces, yet researchers have historically focused only on the contribution of muscle to this task. This dissertation explores the mechanics of postural recovery in two ways: first by describing the relationship between muscular and non-muscular forces involved in postural recovery; and second, by assessing the mechanical demands of responses to disruptions of balance. The net torque (NET) acting about each joint was decomposed into the muscular (MUS) and non-muscular components including gravity (GRA), motion-dependent torques (MDT), and the torque due to platform acceleration (PLA). In Experiment One, five young adult males experienced posterior platform translations of increasing speed. The response was subdivided into two periods for each segment: destabilization (increasing angular momentum) and restabilization (decreasing angular momentum). While PLA was the dominant contributor to the destabilization of the leg and thigh, it was also the most significant facilitator in the restabilization of these segments. HAT destabilization reflected contributions from all torque sources, with a tendency for the contribution from PLA to decrease and MDT to increase under faster platform speed conditions. HAT restabilization was largely achieved by MUS acting about the hip joint. Experiment Two quantified the mechanical demands of postural recovery using the work done by muscular and non-muscular torques acting on each segment. Behavioral strategies employed by the five young adult females were described by segment angle changes in the HAT and foot during the balance response. Multiple regression was performed for each descriptor using work measures (muscular and non-muscular) on each segment as predictor variables. HAT work on hip musculature was a significant predictor for HAT angle change for all subjects. For two subjects who adopted an “on-toes” strategy, work from non-muscular sources acting on the HAT were significant predictors of peak foot angle. These work sources were not included or were weighted less in the foot angle models of two subjects exhibiting hip-dominant responses. Individual models indicate that strategy differences are related to the work performed by different sources. These experiments demonstrate that non-muscular forces are significant modifiers to the neuromuscular response to perturbations of balance.

Ferber, Reed *Effect of proprioceptive neuromuscular facilitation stretch techniques in trained and untrained older adults*, 1998. M.S., University of Oregon (Louis R. Osternig). (174pp 2f $8.00) PE 3811

The Effects of Proprioceptive Neuromuscular Facilitation (PNF) on older adults is unknown and few studies have investigated the effects of age-related changes in muscle on joint range of motion (ROM). This study examined the effects of PNF stretch techniques on knee joint ROM and knee flexor electromyographic (EMG) activity in trained (T) and untrained (UT) older adults. Three PNF stretch techniques: static stretch (SS), contract-relax (CR), and agonist contract-relax (ACR) were applied to UT and T older adults aged 45-55 and 65-75 years. Results indicated that ACR produced 29-34% more ROM and 65-119% more EMG activity than CR and SS, respectively. The 65-75 UT group achieved 124% less knee joint ROM compared to 45-55 UT across all stretch conditions. No significant differences between 45-55 T and 65-75 T were demonstrated indicating a training-related response to PNF stretch techniques. Lifetime training may counteract age-related declines in ROM.

Jiang, Peixing *The effect of foot landing position on foot mechanics during gait*, 1996. Ed.D., University of Georgia (Kathy J. Simpson). (165pp 2f $8.00) PE 3822

Foot injury is often associated with abnormal pronation. The position of the foot during touchdown has been observed to influence pronation during gait. Because there is a wide variance of foot landing positions (FLP) during gait among individuals, it is important to understand how FLP affect the foot mechanics which may be related to foot injuries. The purpose of this study was to determine if different FLP during gait would affect the angular mechanics of the foot-ankle complex. Thirty female participants who had no history of lower extremity dysfunction were selected and assigned to three groups (5.69°±1.03°, 3.83°±1.98° and 14.30°±2.72° for neutral, toe-in and toe-out FLP, respectively) based on their FLP during natural gait. Four CCD-TV (100 fps) cameras and an AMTI force platform (1000 Hz) connected to a BTS™ system were used for the testing. A single factor (FLP) design was used for the study. Each participant performed ten trials of natural barefoot walking. Angular displacements and velocities, net muscle moments (NMM) about the foot clinical axes and center of pressure (COP) paths were generated, as well as ground reaction forces (GRF) expressed relative to both the room coordinate system (GRF_r) and the foot coordinate system (GRF_f). Several differences among the FLP groups were evident. Compared to the neutral FLP performers, the toe-out participants demonstrated the following: greater inversion displacements occurred during the contact and propulsion periods; the GRF_r that were laterally applied during the contact period increased;
and peak abduction and inversion NMMs occurring during the contact period and peak adduction and eversion NMMs occurring during the propulsion period were increased. Conversely, the toe-in performers demonstrated decreased values for these variables. The results indicated that the differences for the NMM values exhibited for the three FLP groups were due partially to the differences in GRF moments acting on the foot. The COP path, an indicator of the GRF moment arms, moved from the lateral to the medial side of the foot’s long axis for the toe-out FLP group, but for the toe in FLP group, the COP path moved from the medial to the lateral side of the foot’s long axis. The magnitudes of the GRF, another determinant of the GRF moments, were different among the FLP groups for the contact period and peak adduction and eversion NMMs occurring during the propulsion period were increased. Conversely, the toe-in performers demonstrated decreased values for these variables. The results indicated that the differences for the NMM values exhibited for the three FLP groups were due partially to the differences in GRF moments acting on the foot. The COP path, an indicator of the GRF moment arms, moved from the lateral to the medial side of the foot’s long axis for the toe-out FLP group, but for the toe in FLP group, the COP path moved from the medial to the lateral side of the foot’s long axis. The magnitudes of the GRF, another determinant of the GRF moments, were different among the FLP groups for the GRF variables. Based on the GRF coordinate system, the lateral GRF increased during the contact period, but decreased and even became medially applied at the end of the stance phase for the toe-out FLP group. Because the FLP affected the mechanics of the foot segment, the FLP should always be considered as a factor for gait analysis.

Kao, Jim Identifying a collective variable of locomotion: a dynamic systems analysis, 1997. M.A., San Jose State University (V. Gregory Payne). (97pp 1f $4.00) PE 3837

A dynamic systems analysis was conducted to identify a collective variable of locomotion. Twenty subjects were between 20 and 29 years of age (mean=25 years) and 20 subjects were between 30 and 39 years of age (mean=33 years). Two collective variables (hip ankle and knee-ankle relative phase angles) were evaluated. These evaluations were made as the value of a control parameter (horizontal velocity) was varied. Subjects performed four trials at increasing, self-selected speeds of walking and four trials at increasing, self selected speeds of running. The trials were videotaped at 60 fields per second. Results of a two-dimensional analysis found that the attractor state (relative phase angle vs. % of stride) of each collective variable was qualitatively similar for the 4 walking trials. In addition, the attractor state for running was qualitatively similar among the 4 running trials, but qualitatively different from the attractor state for walking.

Oates, Deniece D. The effect of open and closed kinetic chain strength training on change in vertical jump height, 1997. M.S., Brigham Young University (Shane S. Schulthies). (74pp 1f $4.00) PE 3810

The vertical jump is an important aspect of many athletic activities and athletes spend significant amounts of time trying to improve their vertical jump height. This study measured strength changes produced by open and closed kinetic chain exercises and their effect on change in vertical jump height. The hypothesis was that the closed chain exercise would produce greater improvement in the vertical jump than the open chain exercises. Forty-nine male college age beginning strength training students volunteered as subjects. They were randomly assigned to an open (OKC) or closed (CKC) kinetic chain lower body strength training program. The OKC program consisted of the hamstring curl, knee extension, and toe press, while the CKC program consisted of the parallel squat exercise. The subjects were pretested for vertical jump height and one repetition maximum of the assigned strength training exercises. They then participated in the assigned strength training program using the DAPRE technique twice a week for 9 weeks, after which the vertical jump height and one repetition maximum were again measured. Both groups made significant strength gains on each lift performed, as measured by paired t-tests. The average change in vertical jump height for both groups was compared using a simple analysis of variance (ANOVA). The average increase in vertical jump height for those in the CKC group was significantly greater than the average increase for those in the OKC group. The reasons for the significant increase appear to be due to the similarity of the exercise to the activity performed, which aids in greater transfer of neural adaptations made during strength training to actual activity.

Rauch, Ursula The effect of high energy insoles on vertical jump performance, 1997. M.S., Brigham Young University (A. Garth Fisher). (36pp 1f $4.00) PE 3806

This study determined the effect of a high-energy insole on vertical jump performance of 39 volleyball and basketball athletes. Subjects were jump-tested using a randomized-groups design where a high-energy insole was compared to a placebo insole. The conditions were double-blind and the independent and dependent variables were randomly assigned. Athletes performed three trial jumps for each of the dependent variables (standing jump, approach jump with a one foot take-off, and approach jump with a two foot take-off). The highest vertical jumps for each of the dependent variables were used for the mean scores. The mean difference scores showed minimal increases in vertical jump performance of the high-energy insole group for each of these jumps: standing jump 0.1 cm; one foot take-off jump 0.5 cm; and two foot take-off jump 0.7 cm. As a result, these scores were not significantly different from zero because their accompanying p values were greater than the standard of 0.05: standing jump t (38)=0.3, p=0.7; one foot take-off jump t (38)=1.3, p=0.2; and two foot take-off jump t (38)=1.9, p=0.1. Therefore, the high-energy insole did not increase vertical jump performance compared to the placebo insole. Keywords: Sports equipment, anaerobic performance, energy return, cushioning systems, shock absorption.

Read, M. Michael The effects of varied rest interval lengths on depth jump performance, 1997. M.A., San Jose State University (Craig J. Cisar). (71pp 1f $4.00) PE 3805
The purpose of this study was to measure the effects of varied rest interval lengths on the vertical jump heights and ground reaction forces during the execution of a depth jump from a predetermined optimal height. Each subject’s optimal depth jump height was determined by executing depth jumps from 10-80 cm. After determining their optimal depth jump height, the subjects performed three sets of 10 depth jumps, each set with a different rest interval duration. The three rest intervals were 15, 30, and 60 seconds and were counterbalanced to each subject. Maximal vertical jump height and vertical ground reaction forces were calculated for each depth jump trial. Two-way analyses of variance revealed that rest interval length did not affect (p>0.05) vertical jump height and vertical ground reaction forces. Therefore, this study demonstrated a 15 second rest interval was enough time for recovery.

Strohmeyer, H. Scott Kinetic and temporal correlates to skillfulness in vertical jumping, 1995. Ph.D., University of North Carolina-Greensboro (Kathleen Williams). (185pp 2f $8.00) PE 3799

Vertical ground reaction forces of countermovement jumps with armswing (CMWA) were examined to determine kinetic and temporal strategies related to skillfulness in vertical jumping. Effective integration of the system (EIS) was introduced to examine skillfulness separate from the influences of genetic talent or training. Vertical jump height was considered susceptible to both genetic talents and extensive training. Kinetic and temporal variables from force-time curves of 51 subjects were evaluated for their relationship to skillfulness using both EIS and vertical jump height. It was hypothesized that more of the variance in EIS could be explained by kinetic and temporal variables than by vertical jump height. A second purpose of this investigation was to examine the effects of standardizing force-time curves mathematically to produce a smooth rise to a single peak force. Smooth rises to peak force were attained by fitting a parabolic trajectory to the force record. It was hypothesized that EIS scores and vertical jump heights would improve as a result of the standardization process. Results of this investigation did not fully support the hypothesis that more variance in skillfulness could be explained when skillfulness was determined by EIS. Explained variance for vertical jump height from kinetic and temporal variables was stronger whether the data were examined in standardized or non-standardized forms. When individuals with highest EIS scores or vertical jump heights before standardization were examined (n=24), explained variance using vertical jump height did not occur. Analysis of individuals exhibiting poor performances (n=27) produced no prediction model for EIS. Standardization of force-time curves resulted in improved performance (i.e., hypothetical performance) for all individuals whose performances were standardized (n=43). The prediction model for skillfulness also increased significantly for EIS and vertical jump height following standardization. Prediction models suggested for EIS and vertical jump height, after standardization, used similar parameters for prediction of skillfulness. The results led to the conclusion that factors related to use of the stored elastic component in muscle are significant to skillfulness whether determined by EIS or vertical jump height.

**SPORTS MEDICINE**

Ashton, Douglas F. Temperature rise in human muscle during ultrasound treatments utilizing Flex-All as a coupling agent, 1996. M.S., Brigham Young University (David O. Draper). (84pp 1f $4.00) PE 3818

This study measured tissue temperature rise via ultrasound delivered through a Flex-all 454™ couplant. Fifteen college-aged subjects had two 23-gauge hypodermic needle microprobes inserted into the medial aspect of the triceps surae complex, at depths of 3 cm and 5 cm. Data were collected on each subject for the following treatments: (a) ultrasound treatment with 50% Flex-all™ mixed with 50% ultrasound gel; (b) non-ultrasound treatment/sham with 100% Flex-all™; and (c) ultrasound treatment with 100% ultrasound gel. Each treatment consisted of ultrasound delivered topically at 1.5 watts/cm² in the continuous mode for 10 minutes. The sham treatment was delivered in the same fashion with no power from the ultrasound unit. The ultrasound via the gel increased the tissue temperature rise to 3.20 °C, whereas the 50/50 mixture increased the tissue temperature only 2.60 °C, or 81% of the 100% gel treatment. Using a modified visual analogue scale, subjects rated their perceived heat of the three treatments. The sham rated as mild heating, whereas subjects believed that the 100% gel and the 50/50 mixture both provided moderate heat. We conclude that a 100% gel couplant is superior to a 50/50 Flex-all™ 0/gel mixture when a temperature increase in the tissue is desired. Keywords: ultrasound, tissue temperature, coupling agents.

Bratvold, Tyren J. A torn anterior cruciate ligament of the knee: diagnosis, treatment and rehabilitation, 1997. B.S., Western States Chiropractic College (Charles Novak). (23pp 1f $4.00) PE 3832

This thesis examines different procedures for diagnosing and surgically treating a torn anterior cruciate ligament of the knee, as well as suggesting an appropriate rehabilitation protocol. Various testing methods used in diagnosing a torn anterior cruciate ligament are explored to determine which tests will be of most benefit to the physician and least expensive to the patient. Various surgical techniques and outcome measures for repairing a torn anterior cruciate ligament were explored in order to establish which procedure would create the best outcome for each patient.
as an individual. A rehabilitation protocol was explored in order to create a proper range-of-motion and strengthening guideline for returning the knee to pre-injury status. This paper demonstrates that a torn anterior cruciate ligament is not a simple injury but rather a combination of correct diagnosis, proper surgical procedure and a lengthy rehabilitation program.

Butterfield, David L. The effects of high-volt pulsed current electrical stimulation on delayed onset muscle soreness, 1996. M.S., Brigham Young University (David O. Draper). (86pp 1f $4.00) PE 3798

We investigated the ability of high-volt pulsed current electrical stimulation (HVPC) administered for 30 minutes at 125 pps to reduce pain, loss of range of motion (ROM), and strength loss associated with delayed onset muscle soreness (DOMS). Twenty-eight subjects were randomly assigned to one of two groups: 1) HVPC; 2) Control. Subjects performed up to 300 repetitions of concentric and eccentric knee extensions with the right leg to induce muscle soreness. Assessments of the three dependent variables were made prior to and immediately following the exercise bout, and before and after each treatment at 24, 48, and 72 hours postexercise. No significant differences in pain reduction ROM increases, or strength improvements were revealed between the two groups. However, the HVPC group did show a more dramatic increase in ROM at 72 hrs postexercise than was observed in the control group. We conclude that HVPC as we administered it is ineffective at reducing pain, loss of ROM, and strength loss associated with DOMS.

Clark, Susan D. Quality ranking and evaluation of accredited undergraduate athletic training programs, 1996. Ed.D., Brigham Young University (Earlene Durrant). (99pp 2f $8.00) PE 3790

This study provided a quality ranking of 61 accredited undergraduate athletic training programs in the United States. Data were gathered through a self-reporting questionnaire designed specifically for this study. To validate the questionnaire a pilot study was conducted using 21 experts in the field of athletic training. Of the 83 program directors surveyed, 79% responded. The following four areas of investigation were explored by the questionnaire: athletic training curriculum, student information, faculty information, and training room staff information. All institutions meet the minimum standards set by the Commission on Accreditation of Allied Health Education (CAAHEP), but the institutions that ranked high in the overall ranking in this study were consistently high in one or more of the four areas. Ranking institutions has always been a controversial issue. On the negative side, academic rankings result in individual halo effects. On the other hand, academic rankings aid both faculty and program evaluation and enhance motivation to improve academic quality. Whether or not the positive aspects outweigh the negative aspects remains debatable. However, it is safe to assume the rating game will continue in higher education. Therefore, the best procedure is to support and improve quality assessment studies rather than put a moratorium on them. Keywords: Quality ranking, program evaluation, accredited program.


The objective of this study was to investigate whether orthotics to control excessive pronation would have an effect on walking and running economy (VO2submax). Ten weight-bearing athletes who were overpronators participated in the study. The subjects walked and ran on the treadmill at three speeds: 3, 6, and 7 mph, with and without orthotics. Oxygen uptake, heart rate, respiratory quotient, and rate of perceived exertion were recorded during the last five minutes of each stage. Subjects were also assessed with and without the orthotics, for possible changes in balance. Results showed no significant differences in economy or any of the other physiological measures, except for HR at 3 and 6 mph (p>0.50). Balance did not significantly change (p<0.05). It was concluded that physiological and balance changes are too modest to be significant with a small sample group.

Demers, Denise S. A prediction equation for estimating body fat percentage using noninvasive measures: a multivariate study of 200 adult women, 1996. M.S., Brigham Young University (Larry A. Tucker). (131pp 2f $8.00) PE 3788

Although several prediction models have been developed that are reliable and accurate, virtually all require expensive equipment or removal of standard clothing. The purpose of the present study was to develop a regression equation using inexpensive methods that do not require individuals to remove their clothing to estimate body fat percentage in adult women. A total of 200 women were hydrostatically weighed and participated in a variety of anthropometric and lifestyle assessments, including skinfolds, circumferences, and questionnaire responses. The sample was randomly split to form estimation and cross-validation groups. A regression model was generated using the estimation group. The equation was then cross validated using the second group. Because the prediction equations from the two groups were statistically equivalent, the groups were combined and final equations were developed using the total sample. The full model included six measures, hip circumference, triceps skinfold (observed and quadratic), age (quadratic), self-reported physical activity, and calf skinfold (quadratic). This equation
accounted for 80% of the variance in the criterion (SEE=3.6). A simpler, five variable equation was also formed that did not include the calf skinfold assessment (R2=.800, SEE=3.6). In conclusion, the prediction equations in this study afford accurate and inexpensive means of estimating body fat percentage in a wide-range of adult women without having them remove their clothing.

Gareau, Tony Hyperbaric oxygen therapy in the treatment of sports injuries, 1997. B.S., Western States Chiropractic College (John Taylor). (18pp 1f $4.00) PE 3844

Hyperbaric oxygenation therapy (HBO) is a process whereby pure oxygen is inhaled while the body is subjected to greater than atmospheric pressures. This type of treatment is now being used to treat acute sports injuries as an adjunct to the normal routines of ice and PT modalities. This paper takes a look at the various effects of HBO therapy and how they relate to the healing process of acute injuries. Also included are an overview of some case reports involving sports injuries and descriptions of current research. Though reports of favorable results are increasing, HBO therapy at this point is experimental and requires more research.

Grutzner, Sally J. The effects of galvanic current and ice on muscle temperature, 1997. M.A., San Jose State University (Jack W. Ransome). (79pp 1f $4.00) PE 3834

Muscle temperature was measured in 20 subjects, 10 males and 10 females, 25.1±2.3 years of age, with no muscle strains in their gastrocnemius muscles, in response to 15 minute treatments of ice, and the treatment of ice with positive polarity galvanic stimulation (PPGS) and 105 minutes of rest. Two-way ANOVAs revealed no significant difference (p>.05) in muscle temperature between treatments. Significant difference (p<.05) existed for each treatment across time. Subjects were divided into two groups based on gender. Two-way ANOVAs revealed no significant difference (p>.05) between groups for the ice treatment. Significant difference (p<.05) between groups existed for ice with PPGS. T-tests conducted over seven 15 minute time intervals revealed no significance (p>.007).

Two-way ANCOVA (p>.05) covering for skinfold thickness, eliminated the gender difference in muscle temperature following the treatment of ice with PPGS.

Hilbig, Jennifer Johnson The differences between physical activity levels and percent body fat using two methods of predicting percent body fat in male senior athletes, 1996. M.S., Brigham Young University (Gary Measom). (63pp 1f $4.00) PE 3830

Percent body fat redistributes from subcutaneous to internalized adipose tissue as aging occurs. Physical activity has an effect on physiological changes that occur with aging. This study compared the methods of bioelectrical impedance and skinfold for predicting percent body fat among male senior athletes. The sample population was composed of male senior athletes who competed in the Huntsman World Senior Games in St. George, Utah in October, 1995. Volunteer subjects filled out a questionnaire explaining events participated in and hours spent in training on each event per week. Height and weight measurements were taken, followed by suprailiac, sub-scapular, biceps, and triceps skinfold measurements. Subjects then had a BIA measurement taken. There was a significant difference between physical activity level (p=0.0005), method of measurement (p=0.0001), and the interaction of level and method (p=0.0086). The athletes participating in the more aerobically intense activity had a lower percent body fat. There is also a greater discrepancy between BIA and skinfold measures as the degree of aerobic activity decreases.


The Internet has forever changed the way society transmits, organizes, and analyzes data and information. A computer language named VRML (Virtual Reality Modeling Language) allows people to access three-dimensional worlds located on the Internet. The purpose of this project is to develop an Internet application as a supplement to the traditional education of Athletic trainers. The Virtual Athletic Training Room is divided into four areas: the Office Area, the Treatment Area, the Hydrotherapy Area, and the Rehabilitation Area. When an object is “clicked” inside the virtual world, information about the object is displayed to the user. The author gathered feedback on the effectiveness of the website from three sources: a peer debriefer, a peer review group, and an online questionnaire. The results indicate that the website is a beneficial educational tool for teaching training room design, function, and application of rehabilitative tools to athletic trainers.

Liljenquist, Paige An evaluation of athletic training support in NATA District Seven high schools, 1996. M.S., Brigham Young University (David O. Draper). (61pp 1f $4.00) PE 3817

More than six million high school student athletes participate in athletics each year. This population suffers approximately 1.3 million injuries annually. These numbers support the need for certified athletic trainers to provide proper medical care during practice and competition. The purpose of this study is to compare how District 7 NATA high schools employ certified athletic trainers to care for student athletes. The comparison is made in four areas: (a) the perceived need of an athletic trainer, (b) the employ-
Close kinetic chain exercises (CKCEs) are commonly prescribed during anterior cruciate ligament (ACL) rehabilitation. They are thought to decrease the anterior shear forces and protect the ACL graft. Few studies have been conducted to quantify muscle activity during CKCEs. The purpose of this study was to determine the EMG activity of four elastic tubing CKCEs on post operative ACL reconstructed patients. Subjects: Fifteen patients (8 men, 7 women), ranging in age from 18 to 44 years ($x=27.4, \text{SD}= 9.1$), and weight from 106 to 203 lbs ($x=157, \text{SD}=31.3$) between 5 and 24 weeks ($x=12.5, \text{SD}=5.7$) post-operative ACL reconstruction surgery (9 with patella tendon autografts and 6 with semitendinosus autografts) volunteered for this study. Methods: The subjects performed four exercises with elastic tubing attached to the uninjured foot: Front pull (FP); subjects pulled contralateral foot forward against resistance, flexing the contralateral hip; Back pull (BP); subjects pulled contralateral foot back against resistance, extending the contralateral hip; Cross-over (CO); subjects steps contralateral foot in front of ipsilateral foot against resistance, adducting contralateral hip; Reverse crossover (RCO); subjects uncross the feet against resistance, abducting the contralateral hip. EMG activity was recorded from the vastus medialis oblique, vastus lateralis, semitendinosus / semimembranosus, and biceps femoris muscles. The hamstring/quadriceps (Ham/Quad) ratio was calculated. The EMG activity varied significantly for each muscle and the Ham/Quad ratio depending on the exercise performed. The front pull (FP) and crossover (CO) exercises showed a high Ham/Quad ratio of $149\% \pm 62$ and $118\% \pm 21$ respectively. Exercises can be designed to predominate certain muscle groups during CKCEs. All four CKCEs produce a co-contraction of the hamstrings and quadriceps and should be considered in early ACL rehabilitation. The FP and CO exercises have especially high Ham/Quad ratio which may reduce the anterior shear forces, and strengthen the hamstrings to protect the graft. Keywords: electromyography, closed chain exercises, elastic tubing, ACL, rehabilitation.

Miller, Amy E. The acute effect of heading in soccer on postural stability and cognitive functioning. 1997. M.A., University of North Carolina-Chapel Hill (Kevin M. Guskiewicz). (63pp 1f $4.00) PE 3813

The purpose of this study was to determine if acute episodes of heading causes cognitive and/or postural stability deficits in the skilled soccer player. Twenty-three, male club and varsity soccer players, ages 18 to 24, from the University of North Carolina participated in this study. Twelve subjects were assigned to the control group and eleven subjects to the experimental group. All subjects were tested on three different occasions for cognitive function and postural stability. The experimental group participated in a 20 minute heading session that involved heading 30 balls immediately preceding their second day of testing. The control group did not participate in the heading session. A mixed model repeated measures analysis of variance (ANOVA) revealed a main effect between testing days. However, no significant differences were revealed between groups. Correlation analyses for the two groups revealed no significant correlation between the cognitive variables and the postural variables at testing session two. However, with the exception of the Wechsler Digit Span, all cognitive functioning scores and postural stability scores correlated significantly with their corresponding scores over the testing sessions.

Prior, Barry M. Body composition of athletes assessed using a four-component model, 1996. Ph.D., University of Georgia (Kirk J. Curenton). (118pp 2f $8.00) PE 3807

The purposes of this study were (1) to use estimates of body composition from a four-component model to determine if the density ($D_{\text{FFM}}$) and composition of the fat-free mass (FFM), and estimates of body composition from body density using the Siri equation, are affected by musculoskeletal development and (2) to validate whole-body composition estimates by dual-energy x-ray absorptiometry (DXA) against estimates from a four-component model in a heterogenous group of athletes and nonathletes. Measures of body density by hydrostatic weighing, body water by deuterium dilution, and bone mineral by whole-body dual-energy x-ray absorptiometry were obtained in 111 collegiate athletes (67 men, 44 women) and 61 nonathletes (24 men, 37 women). In the entire group, variation in $D_{\text{FFM}} (1.075$ to $1.127 \text{ g cm}^{-3}$) and differences between estimates of $\%\text{Fat}$ based on a four-component model ($\%\text{Fat}_{\text{m,n}}$) and from body density ($\%\text{Fat}$) ($8.5$ to $8.1\%$ body mass) were only slightly related to musculoskeletal development as measured by mesomorphy rating ($r_{\text{m,n}}=0.14, p=0.07; r_{\text{m}}=0.16, p=0.04$, respectively).
Variability in $D_{FFM}$ was most strongly related to variability in body water ($r=0.96$) and protein ($r=0.89$), and moderately related to variability in body mineral ($r=0.65$). Gender, race, and athletic status had complex interactive effects on the FFM density and composition that were not explained by musculoskeletal development. Individual differences between $\%\text{Fat}_{d,w,m}$ and $\%\text{Fat}$ estimated from DXA ($\%\text{Fat}_{d,w,m}$) ranged from 9.9 to 7.5% body mass (BM) ($x_{\text{dif}} \pm SD_{\text{dif}} = -0.4 \pm 2.9\%\text{BM}$, $p<0.10$). $\%\text{Fat}_{d,w,m}$ was highly related to $\%\text{Fat}_{d,w,m}$ ($r=0.94$, SEE=2.8% BM) but the relation was slightly different in men ($y=0.90x+0.75$, $r=0.87$, SEE=2.9%BM) and women ($y=0.85x+3.30$, $r=0.94$, SEE=2.6%BM). Differences between $\%\text{Fat}_{d,w,m}$ were not affected by race, athletic status, or musculoskeletal development. The agreement of $\%\text{Fat}_{d,w,m}$ with $\%\text{Fat}_{d,w,m}$ was better than with $\%\text{Fat}_{d,w,m}$ suggesting that estimates of $\%\text{Fat}$ from DXA were more accurate than those from body density. We conclude that many athletes and nonathletes have a FFM density and composition that differs from values assumed in estimating $\%\text{Fat}$ from body density using the Siri equation, that measurement of body water and mineral is necessary for accurate estimates of body composition from body density, and that body composition estimates from DXA are accurate in young adults who vary in gender, race, athletic status, body size, musculoskeletal development, and body fatness.


The purpose of this study was to determine the strongest combination of variables which predict maximal ($30^\circ/s$) isokinetic knee strength using stepwise regression analyses. Male ($n=30$) and female ($n=18$) subjects aged 23.77±1.78 years underwent isokinetic testing to determine quadriceps and hamstring peak torque at 30, 60, 120, and 180°/s. Demographic data of age, body weight, and gender were also included as predictor variables. Strong correlations ($p<.01$) ranging from $r=.62$ to $r=.85$ were found between quadriceps and hamstring peak torque at $30^\circ$/s and hamstring peak torque at $60^\circ$, $120^\circ$, and $180^\circ$/s. One-way ANOVA determined no significant ($p>.05$) difference between peak torque measurements and testing order. Stepwise multiple regression analyses revealed quadriceps peak torque at $60^\circ$/s as the strongest predictor of quadriceps peak torque at $30^\circ$/s ($R=.832$, $R^2=.692$, $SEE=23.544$). Hamstring peak torque at $60^\circ$/s best predicted hamstring peak torque at $30^\circ$/s ($R=.852$, $R^2=.726$, $SEE=14.637$).

Slack, Jason V. Estimating body fat percentage using circumference measurements and lifestyle questionnaire data: a multivariate study of 184 college age females. 1997. M.S., Brigham Young University (A. Garth Fisher). (90pp $1f$ $4.00$) PE 3794

This study developed a regression equation to predict body fat percentage in 18-25-year-old females, using circumference measurements and lifestyle questionnaire data. A total of 184 females participated in this study and a prediction equation was developed using the sample. The equation is as follows: Percent body fat = ($Tc-0.267315$ - (wrist $0.979339$) + (BMI$x0.487971$) + (LQ$x0.595000$) - 20.449819, where $Tc$ is the sum, in centimeters, of three different sites: the biceps, waist, and proximal thigh; wrist is the circumference measurement of the wrist in centimeters; BMI is Body Mass Index weight(kg)/height(m2) and LQ is the sum of three lifestyle questions, numbers 11, 15 and 34. The prediction equation accounted for 74.2% of the variance with a standard error of estimate (SEE) of 2.97% body fat. The PRESS (predicted residual sum of squares) statistic, was used to cross validate the sample with every possible combination of subjects. The standard error of estimation using the PRESS data is 3.04% body fat. In conclusion, this equation provides an accurate and reliable way of estimating body fat percentage using circumference measurements and lifestyle questions.

Slack, Robert W. Analysis of ankle inversion with 20 cm drops onto a laterally tilted force plate in braced and unbraced conditions, 1997. M.S., Brigham Young University (Shane S. Schulthes). (72pp $1f$ $4.00$) PE 3795

Fifteen college age females were filmed dropping expectedly from a height of 20 cm onto a 25° laterally tilted force plate. Reflective markers on the toe, heel, ankle, lower shank, and upper shank were used to identify points for video information that was combined with force plate data. This data combination produced 15 variables involved in weight bearing ankle inversion. These variables were evaluated across three bracing conditions: (1) Unbraced (control); (2) Accommodating orthosis; and (3) Semirigid orthosis. Landing patterns suggest peroneal preactivation that caused significant ankle joint stiffness at landing. The means of four variables were significantly different for unbraced condition. They were: (1) Calcaneal angle measured to right horizontal at impact; (2) Amount of inversion at impact; (3) Rate of inversion from impact to maximum inversion; and (4) Time to peak impact force. Based on the greater rate of inversion in the semi-rigid orthosis and the quicker time to peak impact force in both orthoses, we conclude that external ankle orthoses act to reduce the ability of the ankle joint to attenuate force during expected landings.

Snow, Shawn Proprioceptive rehabilitation of ankle sprain injuries, 1997. B.S., Western States Chiropractic College (Charles Novak). (20pp $1f$ $4.00$) PE 3828

A basic overview of this thesis covers the anatomy and proprioceptive innervation of the ankle, and the injuries that affect proprioception. Determining that ankle sprain/
strains do occur in surfing, a functional instability is introduced as possibly being present in surfers. Proprioceptive rehabilitation in the form of wobble and rocker board training can be incorporated into the general rehabilitation of ankle sprains because proprioception is usually damaged during this type of injury. Proprioception involves the entire body but was discussed only in relation to the ankle. The limited amount of research on surfing injuries has made it difficult to directly reference a point of view.

Stager, Andrew Carl Prognosis after popliteal artery entrapment syndrome surgery, 1997. M.S., University of British Columbia (Doug Clement). (97pp 1f $4.00) PE 3796

The main purpose of this study was to determine the prognosis after Popliteal Artery Entrapment Syndrome (PAES) surgery for young, active individuals. The hypothesis was that after PAES surgery, full restoration of activity level and sport performance with improvements in exercise-induced leg pain (EILP) and activity tolerance occurs when the surgery is carried out at an early stage of the condition. Twenty-three subjects all having had PAES surgery were interviewed and visual analogue scales were used to record data on: 1) activity levels, 2) performance levels, 3) intensity of leg symptoms and 4) intensity of activity tolerated. The above information was evaluated at three different times: 1) prior to the development of symptoms, 2) at the peak of symptoms (preop), and 3) at the present time (follow-up). Each individual underwent a medical evaluation as well as Duplex Ultrasonography of the affected popliteal artery(ies). Lastly, the subjects performed a progressive treadmill test. Control subjects that were matched for age, sex and education level were recruited for comparison. Results showed that the treatment group’s activity level did not change significantly over the time periods. However, the treatment group experienced a significant decrease in its activity from its premorbid level to its current level when compared with the control group (p<.001). Reviewing the performance data, it was evident that the development of PAES caused a significant drop in activity performance for affected individuals (p<.001). Furthermore, the performance did not return to presymptomatic levels after surgery. This result was observed when the treatment group was evaluated on its own (.02>p>.05) and also when compared with the control group (.01>p>.001). The combination of PAES surgery and time did bring about a significant decrease in leg symptoms while exercising when compared with the control group (p<.001). Similarly, an increase in the intensity of activity possible before symptom onset was noted after surgery when compared with the control group (p<.001). A prospective study of PAES patients would be valuable to further define the prognosis for individuals undergoing PAES surgery.

Stay, Jeffrey C. Pulsed ultrasound fails to diminish delayed onset muscle soreness symptoms whether delivered once or twice daily, 1997. M.S., Brigham Young University (Mark D. Ricard). (57pp 1f $4.00) PE 3797

This study examined the effects of immediate and frequent applications of pulsed ultrasound on muscle soreness perception, upper arm circumference, relaxed elbow extension range of motion, and muscular strength. Thirty six adult females were randomly assigned to one of three treatments. Subjects performed 8 sets of concentric / eccentric actions of the elbow flexors to produce delayed onset muscle soreness (DOMS). Twice daily treatments of 20% pulsed ultrasound (1.5 W/cm² temporal peak intensity for 7 minutes) or sham treatments were given immediately following exercise, and for 4 days postexercise. Assessments were recorded before (pretest) and immediately following the exercise bout and at 24, 48, 72, and 96 hours postexercise. A repeated measures analysis of variance showed significant differences (p<.05) in the dependent variables over time, although there were no differences between treatments. Pulsed ultrasound as used in this study did not significantly reduce symptoms of delayed onset muscle soreness.

Swalberg, Mary The effect of semiconductor tapes in reduction of chronic pain, 1996. M.S., Brigham Young University (L. McKay Rollins). (65pp 1f $4.00) PE 3792

This study examines the effectiveness of semiconductor tapes in reduction of chronic pain. The sample consisted of 21 volunteers who were currently experiencing chronic pain. The participants were given a treatment tape and were asked to self-report the intensity of the pain being experienced at five time intervals after the initial evaluation and application of the treatment tape. Statistical analysis failed to show significant difference between treatment with the experimental tape and the placebo tape. The null hypothesis was accepted.

Wertz, Alice Seton Intramuscular and subcutaneous temperature changes in the human leg due to contrast hydrotherapy, 1997. M.S., Brigham Young University (J. William Myrer). (63pp 1f $4.00) PE 3821

We investigated the intramuscular and subcutaneous temperature changes due to contrast whirlpool therapy on humans. We inserted two 26 gauge hypodermic microprobes into the left medial calf: one, 1 cm below the skin and subcutaneous fat and the other, just below the skin. The contrast condition consisted of alternate 5-minute immersions of the treatment leg, first in a hot whirlpool (41° C) then in a cold whirlpool (10° C) for a total of 20-minutes. The control condition consisted of 20 minutes in a cold whirlpool. We used paired t-tests to analyze temperature changes from baseline to 5-minute intervals and
between intervals for both the contrast and the control conditions. Muscle temperature in the contrast condition did not fluctuate significantly from baseline. The largest absolute change was only 0.44°C which we consider to be clinically insignificant. The subcutaneous temperature change in the contrast condition fluctuated from 7.5 to 13.9°C between each 5-minute interval (p<0.05). Our results indicate that contrast therapy, as studied, has little effect on intramuscular temperature.

**PHYSIOLOGY AND EXERCISE EPIDEMIOLOGY**

Bacon, Catherine Jane *The effect of menstrual cycle phase on diffusing capacity of the lung*, 1997. M.S., University of British Columbia (Jerilyn Prior). (137pp 2f $8.00) PH 1585

Pulmonary diffusing capacity (DL) has been observed to decrease during menses. Nonetheless, a descriptive study of alterations in this parameter with menstrual cycle phase has not been completed and the mechanism of change is not clear. Changes in resting single-breath diffusing capacity of carbon monoxide (DLCO), and in its two components: pulmonary capillary blood volume (VC), and membrane diffusing capacity (DM) were measured in 13 normally menstruating women at points within the menstrual cycle chosen to best discriminate between the effects of oestradiol, progesterone and prostaglandins. In addition, haemoglobin concentration ([Hb]), packed cell volume (PCV), and percent of carboxyhaemoglobin (COHb) were measured. Measurements of DLCO, VC, DM, and [Hb] were undertaken at five testing points throughout three menstrual cycles, whilst COHb and PCV were assessed at four points within one cycle. The phase of the menstrual cycle was determined by quantitative analysis of basal body temperature recorded daily by subjects. No changes in resting DLCO divided by alveolar volume (VA) were for ([Hb]) corrected DLCO/VA, DM or VA were found using one-way repeated measures analyses of variance (ANOVA) of the most representative ovulatory menstrual cycle for each subject. Two-way repeated measures ANOVA of DLCO and DLCO/VA and ([Hb]) corrected DLCO and DLCO/VA, which separated the effects of the five testing points and the ovulatory or anovulatory status of a menstrual cycle were also performed and no significant changes were observed. When the effect of the large hormonal differences between an ovulatory and an anovulatory cycle were removed, a trend towards an increase in DM independent of the effects of ([Hb]) at mid-cycle and during the luteal phase compared to the early follicular phase were observed. Notwithstanding the extreme variability of hormonal changes within the human menstrual cycle, without the benefit of hormonal analysis we have not found consistent alterations in DLCO with menstrual phase in normally menstruating women. This is despite careful effort to time diffusion test with points in the cycle that should best discriminate between the hormonal effects of oestradiol, progesterone and prostaglandins.


The purpose of this study was to determine if a difference exists between the way in which aerobically trained (VO2max=55.6 + 6.1 ml/kg/min) and untrained women (VO2max =36.3 + 1.5 ml/kg/min) metabolize fats and carbohydrates at rest. Subjects (n = 12) were fed a high carbohydrate meal (494 kcal, 76% carbohydrate, 23% fat, 5% protein) and high fat meal (500 kcal, 21% carbohydrate, 72% fat, 8% protein) in counter-balanced order. RMR was measured every half hour for 5 hours. RMR was similar between trained and untrained subjects (p=.44). Training status had no overall effect during meal trials (p>0.05). However, trained subjects experienced a peak in metabolism at minute 60, not evident in the untrained subjects (VO2 p = .008, kcal, p = .002). Also Postprandial RQ was lower (p=.007) and fat use was greater (p=.009) during the high carbohydrate meal for the trained subjects. These results show a heightened metabolic response and decreased carbohydrate use in trained subjects following a high carbohydrate meal.

Chudleigh, Daniel W. *Muscle temperature change during ultrasound treatments of 2 and 6 ERA*, 1997. M.S., Brigham Young University (Shane S. Schulthies). (64pp 1f $4.00) PH 1587

This study compared muscle temperature rise during (10 minute. 1 MHz. depth=4 cm) ultrasound treatments between two treatment sizes and two intensities: 2 ERA and 6 ERA at 1.5 W/cm² and 2.0 W/cm² or maximum tolerable intensity. The temperature rise resulting from the ultrasound treatment was the dependent variable. Statistical difference was determined by using a 2 X 2 factorial ANOVA. Factor I (intensity) was a between treatments factor with 2 levels, 1.5 W/cm² and maximum intensity. Factor 1 (treatment area) was a within treatments factor with 2 levels. 2 ERA and 6 ERA. The investigation was performed in a ventilated laboratory. Twenty healthy college-age subjects volunteered to participate in the investigation (Age = 24.7±2.1 yrs). We measured temperature (and computed temperature change) using intramuscular thermocouples 4 cm beneath the skin of the posterior aspect of the left calf. The mean temperature change of the 2 ERA treatments (3.5°C) was significantly greater than the 6 ERA treatments (1.3 degrees C). There was no significant difference between the two treatment intensities (F=0.319,
This investigation examined the effects of 10 consecutive days of exercise, without concomitant mass loss, on lipid and lipoprotein metabolism (Tg, VLDL-Tg, TC, LDL-c, HDL-c, HDL2-c, HDL3-c) and insulin and glucose responses to an oral glucose load in sedentary, obese males with abnormal glucose tolerance. Six centrally obese men with abnormal glucose tolerance participated in 10 consecutive bouts of aerobic exercise consisting of treadmill walking at ~73 age-predicted HRmax for 40 minutes daily. Fasting lipids, glucose tolerance and insulin response to a glucose load were measured before and after the 10 day training period. Glucose and insulin responses to a glucose load were evaluated using a traditional oral glucose tolerance test (OGTT). All blood tests were performed following an overnight fast. There was a significant (p<0.05) decrease in the area under the glucose curve during the OGTT following the training period (Glucose area: 32,540.0 (5,370.4) mg·dl⁻¹·min⁻¹ vs. 31,247.5 (5,571.6) mg·dl⁻¹·min⁻¹). There was also a significant (p<0.05) decrease in glucose concentration at the 90 min. time point following the training period (90 min.: 307.0 (51.5) mg·dl⁻¹ vs. 278.2 (58.3) mg·dl⁻¹). The area under the insulin curve decreased 6% following the training period, but this finding did not achieve statistical significance (p>0.05). Tg and VLDL-Tg were both significantly reduced following the training period when compared to pre-training values (Tg: 206.0 (33.0) mg·dl⁻¹ vs. 132.7 (13.4) mg·dl⁻¹; VLDL-Tg: 159.5 (24.9) mg·dl⁻¹ vs. 96.2 (10.0) mg·dl⁻¹). TC was significantly (p<0.05) reduced following the 10 days of exercise when compared to pre-exercise (179.3 (7.8) mg·dl⁻¹ vs. 160.0 (4.1) mg·dl⁻¹). LDL-c was not significantly (p>0.05) changed following the 10 day exercise period (LDL-c: 104.8 (4.1) vs. 101.3 (4.6)). HDL-c and its subfractions were not significantly changed (p>0.05) when comparing pre-training to post-training values (HDL2-c: 34.8 (2.5) mg·dl⁻¹ vs. 34.2 (1.4) mg·dl⁻¹; HDL2-c: 1.8 (0.9) mg·dl⁻¹ vs. 2.0 (0.7) mg·dl⁻¹; HDL3-c: 32.5 (1.4) mg·dl⁻¹ vs. 32.2 (1.0) mg·dl⁻¹). These data suggest that short-term exercise training, without concomitant mass loss is effective in improving Tg, VLDL-Tg, TC, glucose tolerance and insulin sensitivity in obese males with abnormal glucose tolerance. Further, the data suggests that beneficial changes in lipid and lipoprotein levels may be mediated by changes in glucose metabolism in this population.

Dockter, Cindy R. The physiological responses to walking and stepping while wearing a weighted vest, 1997. M.S., University of Wisconsin-LaCrosse (John P. Porcari). (37pp 1f $4.00) PH 1595

Fifteen female Ss, age 21-39, were tested under a variety of conditions while wearing a weighted vest. The modalities tested include walking on a treadmill at 3.5 mph at 0 and 10% grades, stepping on a StairMaster Gauntlet at 52 steps/min, stepping on a Tectrix Stair-stepper at 40 feet/min, and stepping up and down on an 8 inch aerobic step.


This study compared submaximal intensity deep water running (DWR) and treadmill running (TMR) exercise in eight trained male cross-country runners during their fall competitive season. Each subject completed a dry land and deep water running trial at heart rates equivalent to 60% and 80% treadmill maximal oxygen consumption (VO2max). Oxygen consumption (VO2), ventilation (VEstpd), energy expenditure (Kcal·min⁻¹), respiratory exchange ratio (RER), carbohydrate and fat utilization (g·min⁻¹), and rates of perceived exertion (RPE) were measured during each 5 minute steady state stage for both trials. The main effect of intensity interaction for VEstpd was significant, demonstrating a difference between trials at 80% VO2max (92.3 ± 7.4 L·min⁻¹ vs. 74.2 L·min⁻¹, p=0.007, for the DWR and TMR trials, respectively). At the same submaximal intensity, VO2 (47.3 ± 48.0 mL·kg⁻¹·min⁻¹), RPE (13.6 vs. 12.3) and energy expenditure (16.1 ± 16.5 Kcal·min⁻¹) did not differ significantly between the deep water running and the treadmill running trials, respectively. Because VO2 and energy expenditure were the same during treadmill and deep water running, the overall active muscle mass appears similar between trials. However, the significantly higher VEestpd and RER during deep water running indicate an altered pattern of muscular recruitment for the upper and lower extremities, particularly at higher levels of exercise intensity. Although deep water running and treadmill running seem to elicit similar rates of energy expenditure, the concepts of training specificity should be further considered. Nevertheless, these results are in agreement with past research and demonstrate that deep water running may be an extremely useful cardiovascular tool for injury prevention and rehabilitation. Future research should determine patterns of muscular recruitment and activity to better evaluate the efficacy of deep water as a dry land running performance enhancement tool.
at a metronome rate of 112. For each modality Ss exercised for 5 minutes under each of the following conditions: no weight, 5%, and 10% of body weight (BW). Every minute VO$_2$, HR, RER, and Kcal/min were measured. RPE was measured prior to the 5th minute of each condition. In general, at 5% BW VO$_2$ and Kcal/min increased 6%, RPE averaged 1 unit higher, and HR increased 4 bpm. At 10% BW, VO$_2$ and Kcal/min increased 11%, RPE averaged 2 units higher, and HR increased 7 bpm. It is concluded that the use of the weighted vest can increase the intensity of walking and stepping exercises, therefore providing additional benefits to one’s exercise program.

Fitzgerald, Dani J. *Cardiovascular endurance effects of a required college health, physical education, and recreation class*, 1997. M.S., University of Wisconsin-LaCrosse (Philip K. Wilson). (49pp 1f $4.00) PH 1588

The Cooper 1.5 mile run/walk was utilized to assess changes in cardiovascular endurance of students enrolled in Health, Physical Education, and Recreation (HPR) 105, Creating a Healthy, Active Lifestyle, at the University of Wisconsin-La Crosse. Seventy-three experimental subjects enrolled in HPR 105 were tested at the beginning and end of the 1997 Spring semester and compared to a control group of 34 students, who had not taken the course. A three-way ANOVA with repeated measures indicated no significant difference (p>.05) between experimental and control groups or between pre- and posttest running times. There was a significant difference (p<.05) between men’s and women’s running times, however no difference in how they responded by being enrolled in HPR 105. The experimental subjects classified as below average by their pretest run times were examined separately from the average and above average subjects. This was done to determine if the below average subjects’ change in cardiovascular endurance was greater than the average and above average group. The below average subjects’ average gain was .9 minute compared to .1 minute of the average and above subjects. This was only based on three subjects and further studies need to be conducted to determine if the lower fit subjects are actually making greater cardiovascular endurance gains. The reason that both groups responded similarly may be attributed to the fact that the subjects in HPR 105 had another test to choose from to assess their cardiovascular endurance, therefore not all chosen subjects volunteered to be included in the study. Volunteers were also relied upon for participation in the control group. This could have biased the subject population. The change of seasons that occurred during the study could have also contributed to the similarities between the groups.

Gracey, Kathryn H. *Effects of elevated muscle temperature on exercise-induced muscle sympathetic nerve activity*, 1997. M.A., University of Georgia (Chester A. Ray). (34pp 1f $4.00) PH 1567

The muscle metabo- and mechanoreflexes have been shown to increase muscle sympathetic nerve activity (MSNA) during exercise. Group III and IV muscle afferents, which are believed to mediate this response, have been shown to be thermosensitive in animals. The purpose of the present study was to evaluate the effect of muscle temperature on MSNA responses during exercise. Eleven subjects performed ischemic isometric handgrip at 30% of maximal voluntary contraction to fatigue followed by 2 min of postexercise muscle ischemia (PEMI), with and without local heating of the forearm. Local heating of the forearm increased forearm muscle temperature from 34.4±0.2° C to 38.9±0.3° C (p=.001). Diastolic and mean arterial pressures were augmented during exercise in the heat. MSNA responses were greater during ischemic handgrip with local heating compared to control (no heating) after the first 30 s. MSNA responses at fatigue were greater during local heating. MSNA increased by 16±2 and 20±2 (bursts-30 s$^{-1}$) for control and heating, respectively (p=.03). When expressed as a percent change in total activity (total burst amplitude), MSNA increased 531±159% and 941±237% for control and heating, respectively (p=.001). However, MSNA was not different during PEMI between trials. This finding suggests that the augmentation of MSNA during exercise with heat was due to the stimulation of mechanically sensitive muscle afferents. These results suggest that heat sensitizes skeletal muscle afferents during muscle contraction in humans and can play a role in the regulation of MSNA during exercise. Keywords: exercise pressor reflex, isometric contraction, muscle ischemia, muscle temperature, group III and IV afferents.

Hair, Christopher Heath *The effects of high volume resistance training on lipid profiles and insulin sensitivity*, 1997. M.A., University of North Carolina-Chapel Hill (Robert G. McMurray). (69pp 1f $4.00) PH 1569

The purpose of this study was to examine the effects of a high-volume resistance training program on lipid profiles and insulin sensitivity. Fifteen healthy, untrained, college-aged men and women completed an eight-week high volume resistance training program consisting of three exercise sessions per week. The subjects completed three sets of eight exercises at 70% of their 1RM to volitional fatigue (approx. 12-15 repetitions) with one minute rest between sets, 3 times per week. Blood samples were drawn pre program (two separate dates) and post program. Levels of total cholesterol, HDLs, LDLs, and triglycerides were unchanged from pre program to post program samples. In addition, basal levels of insulin and glucose remained unchanged over the course of the program. Thus, insulin sensitivity (glucose:insulin ratio) was also unchanged between pre and post program levels. It was concluded that an eight week high volume resistance training program has no significant effects on lipid profiles, or insulin sensitivity.
Jordan, Joel C. *The relationship between percent peak oxygen consumption and peak heart rate during deep water running in the adult population: age 50 to 70 years*, 1997. M.S., University of Mississippi (Stanley P. Brown). (49pp 1f $4.00) PH 1570

This study was performed to investigate the relationship between relative heart rate and relative oxygen consumption in the older adult population while performing vest-supported deep water running (DWR). It was hypothesized that there would be a significant relationship between oxygen consumption and heart rate. Additionally, it was hypothesized that there were no differences in the regression equations by gender and age groups. Twenty-three (14 male and 9 female) apparently healthy older adults, aged 50 to 70 years, volunteered for this study. Each subject completed a practice session so that the DWR technique could be fully learned, then returned to complete a VO2peak test. DWR to VO2peak was performed in 3-minute stages at leg speeds controlled by a metronome beginning at 60 clicks per minute and increasing 12 clicks per minute each additional stage. VO2 and heart rate were continuously monitored by open circuit spirometry and radiotelemetry, respectively. Simple linear regression analysis was used to establish the relationship between the physiological variables. F ratios were found from the residual sum of squares of both an unrestricted and restricted model to test the hypotheses comparing gender and age groups. The squares of both an unrestricted and restricted model to test the hypotheses comparing gender and age groups. Twenty-three (14 male and 9 female) apparently healthy older adults, aged 50 to 70 years, volunteered for this study. Each subject completed a practice session so that the DWR technique could be fully learned, then returned to complete a VO2peak test. DWR to VO2peak was performed in 3-minute stages at leg speeds controlled by a metronome beginning at 60 clicks per minute and increasing 12 clicks per minute each additional stage. VO2 and heart rate were continuously monitored by open circuit spirometry and radiotelemetry, respectively. Simple linear regression analysis was used to establish the relationship between the physiological variables. F ratios were found from the residual sum of squares of both an unrestricted and restricted model to test the hypotheses comparing gender and age groups. The squares of both an unrestricted and restricted model to test the hypotheses comparing gender and age groups.


This study was designed to determine if training using a hang board could improve grip strength and climbing performance. The sample included 26 male Ss (18-26 yr.). Subjects voluntarily enrolled in one of two 8 week indoor rock climbing classes at the University of Wisconsin-La Crosse. The classes were assigned as either the control (n=11) or treatment group (n=15). The groups were determined via coin toss. Subjects completed grip strength and climbing performance measurement tests before and after the instructional period. Treatment subjects participated in a total of 12 training sessions over the 8 weeks of instruction. Results of a two-way ANOVA with repeated measures indicated a significant (p<.05) pre/post by group interaction. A Tukey’s post-hoc test was used to examine within group differences. The treatment group exhibited a significant (p<.05) increase of 5% in grip strength whereas the control group experienced a insignificant decline of 4%. Results of a two-way ANOVA upon climbing performance data indicated a significant (p<.05) main effect for climbing performance gain when both groups’ data were combined.


The purpose of this study was to examine the effects of both aerobic and anaerobic exercise on sex hormone-binding globulin (SHBG) and free testosterone concentrations. Nine subjects completed three experimental sessions each, including a resting control, aerobic exercise, and anaerobic exercise trial. The control trial elicited no change in either SHBG or free testosterone concentrations. SHBG concentrations also exhibited no change in response to the aerobic exercise trial, while free testosterone increased after aerobic exercise. In contrast, both SHBG and free testosterone increased significantly after the anaerobic trial. It was speculated that each of these increases in free testosterone and SHBG were due to reduced metabolic clearance, induced by reduced hepatic blood flow in response to strenuous exercise. The anaerobic exercise appeared to have the greatest effect on hormonal and binding protein concentrations, causing a significantly greater change in free testosterone and SHBG concentrations than did the aerobic exercise trial or control trial.

Kim, Junghoon *The influence of force production and eccentric exercise on growth hormone*, 1997. M.S., Ball State University (Bruce William Craig). (92pp 1f $4.00) PH 1575

The main purpose of this study was to investigate the relationship between human growth hormone (hGH) and two separate components of resistance exercise. Eight non-weight-trained subjects (23.3±3±0.3 yrs) performed three force production trials (FPT), at different concentric workloads, and an 120% eccentric exercise trial (EET) on the Cybex 6000. Blood samples (3 mls) were taken pre- and post-exercise and analyzed for lactate, creatine kinase (CK) and hGH. Electromyographic (EMG) activity of the quadriceps muscle was recorded during each trial. The mean peak torque produced during the FPTs increased as work intensity increased but was the highest in the EET. The data for total work showed a proportional relationship with the intensity of the three concentric work loads but not the 120% EET. EMG activity of vastus medialis (VM) and rectus femoris (RF) measured during EET was 26% less than RF of 50% and 15% less than VL of 70% in FPT, respectively. The highest hormonal response occurred following the 120% EET. The hormonal response following the FPTs was highest in the 90% FPT with the two lower work intensity trials (50 and 70%) showing no clear
hormonal response. Although the hGH response was the highest in the 120% EET, the post-exercise lactic acid levels in EET were 24% less than that of the 90% FPT. Creatine kinase (CK) activity was significantly elevated 36 hours after the last bout of EET which suggests that the eccentric exercise resulted in muscle damage. The results from concentric trials showed that muscle force generation, EMG, and lactic acid of the three different concentric trials were well correlated to the pattern of hGH secretion. However, only peak torque was consistent with the hGH response of the EET. The highest peak torque and hGH levels were achieved with eccentric exercise. The highest levels of fatigue, as a result of the combination of longer exercise time and overloading of the muscle during EET, may explain the higher hGH output. The muscle damage caused by the eccentric trial was enough to induce delayed onset of muscle soreness and may be the stimulus for the higher hGH output. The hGH response may facilitate repair of the muscular damage induced by eccentric exercise by promoting protein synthesis.


A 7-week hangboard training program was conducted on the indoor climbing wall at the University of Wisconsin-La Crosse (UW-L). Two Differential-Tex™ hangboards were utilized for this study. A sample of 21 female 5s (18-26 yr) participated in this study (9 experimental and 12 control 5s). All 5s were students enrolled in an indoor rock climbing class at UW-L. 5s in the experimental group trained on the hangboard twice a week for 7 weeks during class time. Training sessions took approximately 10 minutes. 5s spent the remainder of each class period participating in normal class activities. The hangboard training sessions consisted of 3 cycles of 6 hang repetitions, each one lasting 5 s and progressing to 7 and 10 s over the duration of the study. Each hang utilized a different pair of holds which got progressively smaller. Control 5s participated in normal class activities. Climbing performance and grip strength were measured prior to and upon completion of the training program. The results showed a significant (p<.05) interaction between the groups for performance from pre- to posttesting, indicating that the experimental group increased their performance score significantly more than the control group from pre- to posttesting. There was no significant (p>.05) interaction found between the groups for grip strength from pre- to posttesting, indicating that the groups responded similarly in grip strength over the duration of the study.

Kluckhohn, James C. Isokinetic evaluation of the knee flexors and extensors of male and female sprinters and distance runners, 1997. M.S., University of Wisconsin-La Crosse (Marilyn K. Miller). (65pp 1f $4.00) PH 1573

Peak torque/body weight (PT/BW) of the knee flexor (KF) and knee extensor (KE) muscles and KF/KE strength ratios in male and female control, distance, and sprint groups were studied. A total of 48 5s performed leg extension and flexion using the Biodex Inc. isokinetic dynamometer at 60, 180, and 300 degrees/second (deg/sec) on both legs. Distance and sprint groups came from the University of Wisconsin-La Crosse track teams, while control subjects came from the student population. Significance (p < .05) was identified between groups and speeds on the PT/BW data using a 2-way ANOVA with repeated measures. A Fisher's LSD post-hoc test found the male sprint group significantly different than all female groups, except for the female sprint group at the left KE muscles. Male distance runners were significantly (p<.05) different than the female distance group in the left and right KE muscles. Speeds were significantly (p<.05) different at 60 deg/sec from 180 deg/sec, and 300 deg/sec for left and right KE and right KE muscles and significantly (p<.05) different between all speeds for the left KE muscles. Significance (p<.05) existed between speeds using a 2-way ANOVA with repeated measures on KE/KE data. A Fisher's post-hoc test revealed that 60 deg/sec was significantly different than 180 deg/sec and 300 deg/sec for both right and left KE/KE ratios.


The problem was to determine if 104 children in Grades 1 through 5 (ages 6 to 11 years) could be taught to perceive the physical exertion level necessary, using the Children's Effort Rating Table (CERT), to reach and maintain their prescribed heart rate (HR) training zone (130 to 180 bpm) in physical education class. During Phase I (5 training sessions) the subjects received instructions and feedback, practiced exercising within the HR training zone, and reported a CERT value at two random times. During the two experimental sessions of Phase II (Trial 1 and Trial 2), sixty-two percent of the subjects could set their exercise intensity within the HR range for Trial 1 but only 40% could for both trials. Pearson correlations between HR and CERT values were -.18 (Trial 1) and -.17 (Trial 2). (Reliability intraclass correlations of the CERT were .59 (Trial 1) and .54 (Trial 2). The results indicated that the children had some ability to set their exercise intensity using HRMs. The children were unable to use their perception skills to rate physical effort. The data do not support the CERT as a practical tool to use when teaching young children to set exercise intensity in the physical education setting.

Kwasnicki, Sherri Changes in maternal body composition from month one to month six postpartum in 11 breastfeeding, exercising women, 1997. M.S., University of British Columbia (Alan D. Martin). (156pp 2f $8.00) PH 1568
In vitro studies indicate that during lactation, lipolysis is significantly higher in the gluteo-femoral region compared to other periods in a woman’s life. Additionally, there is a marked decrease in LPL activity in the femoral region during lactation (Rebuffe-Scrive, 1985). This suggests that fat is mobilized preferentially from the femoral region to be utilized for the production of milk. Animal studies clearly indicate that maternal fat, particularly gluteo-femoral fat, is utilized for the production of milk (Steingrimsdottir, 1980; Bergmann, 1994; Roberts, 1984). However, human studies present varying results (Quandt, 1983; Kramer, 1993; Dewey, 1993; Manning-Dalton, 1983; Naismith, 1973; Brewer, 1989). There is enough evidence, however, to suggest that there is a relationship between lactation and the reduction of gluteo-femoral fat. It is well-documented that exercise aids in the reduction of body fat and therefore, it is hypothesized that exercise during the lactating, postpartum period will have the effect of mobilizing fat, especially gluteo-femoral fat, more readily than during any other period in a woman’s life and return a woman to her pre pregnancy figure more quickly. The compounded effect of exercise and breastfeeding on improving maternal body composition may encourage more women to participate in both of these healthy activities, thus improving her and her infant’s health. It was the purpose of this study to examine maternal body composition changes in 11 breastfeeding, exercising women from month one to month six postpartum. It was hypothesized that the breastfeeding, exercising women would experience a larger reduction in gluteo-femoral fat compared to abdominal fat and that they would return to their pre-pregnancy weight by six months postpartum. Body weight, girth, skinfold, DXA measurements (BMC, BMD, Total body fat, body fat %, LTM, regional fat distribution), caloric intake, infant feeding patterns, infant size measurements, and estimated VO2max were studied in 11 breastfeeding exercising women from month one to month six postpartum. Significant differences were found in body weight, girths, skinfolds, DXA BMC, DXA BMD, DXA body fat %, DXA total body fat and VO2max, in the subjects from month one to month six postpartum. The skinfold, girth and DXA regional fat distribution measurements do not suggest a regionalized, specialized functioning of body fat for the purpose of milk production and instead, the results suggest a more generalized, proportional loss of body fat from the abdominals, legs and trunk. The subjects did not return to their pre-pregnancy weights by 6 month postpartum as expected. From the present study, we cannot conclude that breastfeeding, exercising women lose fat or weight any more quickly than breastfeeding, non-exercising or formula feeding, non exercising subjects. Instead, a multifactorial theory to weight and fat control during the postpartum period is suggested. This study is significant because it suggests that women can exercise and breastfeed thus improving their MVO2, their subsequent energy and stamina levels and their body composition without any detrimental effects to their infant and maternal milk production. This study also presents a very comprehensive analysis of body composition in this particular subject group including an examination of DXA values.

Lee, Eric G. *Relationship between moderate intensity endurance training volume and natural killer cell cytolytic activity*, 1997. M.S., Washington State University (Sally E. Blank). (91pp 1f $4.00) PH 1577

This study was designed to examine if a dose-response relationship exists between moderate intensity chronic exercise stress and murine splenic natural killer cell (NK) cytolytic activity. It was hypothesized that a threshold exists for training-induced enhancement of NK cell cytolytic activity. Female, Swiss Webster mice (n=40) were assigned to treatment groups on the basis of body weight. Treatment groups consisted of either treadmill control (TC) or treadmill trained mice. Trained mice ran at a constant speed of 12 meters/minute (8° grade) for: 15 minutes (EX15), 30 minutes (EX30), or 60 minutes (EX 60) per day, five days per week for 10 weeks. NK cytolytic activity was determined by a standard 51Cr release assay. Cytolytic activity was expressed as median lytic units (LU), median LU per AsGM-1+ cell, and median LU per spleen. NK cytolytic activity was not statistically increased by any training volume. However, the greatest increase in NK cell cytolytic activity (median LU per AsGM-1+ cell) was observed in EX30 group (p =0.1). Training volumes less than or greater than this level produced smaller increases in NK cytolytic activity. These data provide preliminary evidence supporting an inverted U shaped relationship between training volume and increased basal NK cell cytolytic activity.


The purpose of this study was to determine the relationships among physical characteristics and aerobic and anaerobic capacities in wrestlers. A group of 15 male athletes between the ages of 18 - 27 years of age from the University of Wisconsin La Crosse wrestling team volunteered for this study. A VO2max test on the cycle ergometer was used to assess aerobic capacity, and the Wingate anaerobic power test assessed anaerobic capacity. The average VO2max for this group was 45.5 ml·kg-1·min-1, while the average peak and mean anaerobic powers were 793.3 and 621.3 Watts, respectively. The VO2max values fell short of the average when compared to wrestlers in other studies; however, peak and mean anaerobic power values were well above the reported average. A significant (p<.05) relationship was found when aerobic capacity was expressed in absolute terms (L·min-1) to body weight and
lean body mass. No significant (p>.05) correlations were found when these variables were compared to relative aerobic power. Significant (p<.05) relationships were found between mean and peak power and the physical characteristics of height, percent body fat, body weight, and lean body mass. When expressed in absolute terms (L·min⁻¹), VO₂max was significantly (p<.05) related to mean and peak anaerobic power. These results reveal that an increase in physical size (i.e., height, weight, and lean body mass) contributes to a greater absolute aerobic capacity and anaerobic capacity. The finding that there were no significant (p>.05) correlations between relative aerobic and anaerobic capacities of wrestlers in the present study suggests that each energy system acts as its own entity.

Martin, James R. *The effect of a 12-week resistive training program on the blood lipid levels of previously sedentary adult women*, 1994. M.S., Brigham Young University (Larry Tucker). (103pp 2f $8.00) PH 1589

Purpose. The purpose was to determine the effects of a 12-week strength training program on low-density lipoprotein cholesterol (LDL) and high-density lipoprotein cholesterol (HDL) levels. A secondary objective was to determine the influence of age and changes in body fat, saturated fat intake, abdominal fat, and muscular strength on the effects of strength training on blood lipids. Design. A pretest-posttest experimental design was employed and subjects were randomly divided into either a resistive training group or a control group. Intervention. Subjects in the resistive training group participated in a 3 days/week strength training program for 12 weeks. Subjects in the control group engaged in 3 days/week of light stretching for 12 weeks. Subjects sixty-two women with a mean age of 42.8±11.5 served as subjects. All subjects reported being sedentary for at least 12 months prior to participation in the study. Measures. Percent body fat, muscular strength, and abdominal fat were assessed at baseline and after 12 weeks. Dietary intake was recorded daily by each subject for 7 days at baseline, 6 and 12 weeks. Exercise logs were maintained by each participant. Blood was drawn from each participant at baseline and twice for the posttest, 12-18 hours and 36-42 hours following the last workout. Results. Following the 12-week intervention, LDL concentrations of the strength training group decreased significantly more than the control group on the second posttest. However, HDL levels did not differ from the lifters compared to the controls across the study. Control of the potential confounders had little influence on the exercise effects of strength training. Conclusions. It appears that adult women who participate in a comprehensive strength program 3 days/week for 12-weeks tend to experience a significant non-acute decrease in LDL cholesterol levels compared to controls.

McAlpine, Christine M. *A comparison of the CardioGlide, CrossWalk, and treadmill walking in body composition and blood lipids in middle-aged men and women*, 1996. M.S., Brigham Young University (Philip E. Allsen). (60pp 1f $4.00) PH 1603

Sixty-seven middle-aged (mean age 39.8; +/-6.9), sedentary men and women participated in a study comparing changes in body composition and blood lipid levels after 12 weeks of training utilizing the CardioGlide, CrossWalk, or treadmill walking program. The study followed a pretest, treatment, posttest design. Blood lipids and body composition were assessed during the pretest and posttest. The participants, who were randomly assigned to a group, worked at 60% of their age-predicted maximum heart rate (MHR)(220-age) for 20 minutes. Intensity gradually increased to 80% of MHR, and duration increased to 30 minutes. Results revealed a significant change in body composition in each of the groups. All groups decreased percent body fat (CardioGlide 4%, CrossWalk 5.5%, treadmill 6%). No significant change in body composition occurred among any of the groups over time. Blood lipid levels did not change significantly from pretest to posttest, nor were there any changes among the groups over time. Training 3 days per week for 12 weeks using the CardioGlide, CrossWalk, or treadmill is associated with significant improvements in body composition. No advantage resulted from using one type of machine to improve body composition or change blood lipids to the others among previously sedentary adults over a 12-week period. Keywords: Body composition, cholesterol, exercise, home exercise equipment.

Mickelson, Scott A. *The pharmacology and physiology of anabolic-androgenic steroids*, 1997. B.S., Western States Chiropractic College (Larry Rosenbaum). (21pp 1f $4.00) PH 1579

Anabolic-androgenic steroids (AAS) are testosterone-like molecules which have been in use since the early 1940's. While the AAS's have been used clinically to treat hypogonadism, muscle wasting, and many other conditions, they have been increasingly used over the years by athletes to improve both performance and appearance. AAS's are unique in their ability to initiate anabolic activity at the level of the gene. By binding to an intracellular receptor, AAS's interact with a DNA response element which ultimately leads to increased muscle protein synthesis. A goal for many years has been for the chemist to design an AAS with more anabolic than androgenic activity. While the use of AAS to enhance athletic performance remains controversial, the many adverse effects of these drugs are known. The heart, liver, integument, reproductive system, and psyche are all severely compromised with chronic high doses of AAS's. The biggest problem in assessing the absolute dangers in AAS use is the lack of clinical studies
relating to the large doses most athletes and bodybuilders generally use, and the length of time on the drug. This lack of clinical studies additionally makes it difficult to compare the effects of AAS’s on male versus females. While the clinical utility of AAS’s can be therapeutically useful, their use in athletics remains an open question.

Norman, Matt J. The relationship between absenteeism and cardiorespiratory fitness, 1997. M.S., Brigham Young University (Steve G. Aldana). (59pp 1f $4.00) PH 1598

To investigate the association between illness-related absenteeism and cardiorespiratory fitness (CRF). A secondary purpose was to determine the relationship between self-reported absenteeism and company reported absenteeism. The design included cross sectional biometric data and retrospective self reported and company reported absenteeism data. Data were collected at Salt Lake County Government Center. Subjects consisted of 225 county employees. Absenteeism data were gathered from self-report and company records. VO2max was estimated using a written questionnaire. When absenteeism data ≥ 5 days) absenteeism there was a significant difference between the 3 groups, however after statistical control for age, gender, BMI, and smoking, the relationship between fitness and absenteeism was no longer significant. A strong association was found between self-reported and company reported absenteeism (r=.86). These findings suggest that worksite absenteeism is not significantly related to CRF and that other variables such as morale, productivity and even perceived health may have a greater impact on employee absenteeism. Key Words: Absenteeism, Cardiorespiratory Fitness, Worksite.

O’Donnell, Dana K. The relationship between oxygen consumption and heart rate in college-aged males and females during non-supported deep water running, 1996. M.S., University of Mississippi (Stanley K. Brown). (45pp 1f $4.00) PH 1597

The purpose of this study was to investigate the relationship between heart rate and oxygen consumption while performing non-supported deep water running in college aged males and females. A second purpose was to compare regression equations predicting oxygen consumption from heart rate between methods of support (e.g., unsupported versus vest support). It was hypothesized that there were no significant differences between oxygen consumption as ml/kg·min⁻¹, l·min⁻¹, and ml/kgLBM²·min⁻¹ in males and females during non-supported DWR. Additionally, it was hypothesized that there were no differences in the regression equations when comparing by gender groups and method of support. Thirty-three apparently healthy college-aged students (15 males and 18 females), aged 19 to 28, volunteered for this study. Each subject completed practice sessions until satisfactory DWR was attained and then returned for a VO2peak test in the water on a following day. The test involved the performance of a deep water running graded exercise test at a cadence of 72 beats per minute and increased 12 beats per minute each subsequent three minute stage. Heart rate and oxygen consumption were monitored continuously throughout the test. The hypotheses were tested using a simple linear regression statistic. F-ratios were developed from the residual sum of squares of a restricted and unrestricted model to test the hypotheses comparing gender groups and method of support. It was shown that non-supported DWR is a mode of exercise that does not produce a graded physiologic response. This study demonstrated that during unsupported DWR heart rate predicts oxygen consumption in ml/kg/min with the highest correlation coefficient and the lowest standard error in both gender groups. Furthermore, all regression equations are statistically different by gender and method of support.

Pripstein, Laura Accumulated oxygen deficit among highly conditioned female rowers during a 2,000 meter race simulation, 1997. M.S., University of British Columbia (Ken Coutts). (67pp 1f $4.00) PH 1604

In the last twenty years there have been various studies that have examined physiologic demands of rowing for the competitive athlete, however most of the literature focuses on male rowers. Now with the growing popularity of women’s rowing programs at both collegiate and national levels, there is a need for research that evaluates the physiological profiles of highly conditioned oarswomen. The significant contribution of aerobic work to a rower’s performance has been substantiated in past research (Hagerman, F.C., 1984), however, fewer studies have specifically looked at anaerobic energy release during a simulated 2,000 meter rowing race in female rowers. This is partly due to the difficulty in quantifying anaerobic energy capacity in the laboratory. Studies by Medbo et al. (1988,1993) have validated the linear extrapolation method of accumulated oxygen deficit (AOD) to determine anaerobic energy release during exercise. Data on AOD suggest that 2 minutes of exercise to exhaustion is required to use anaerobic sources fully (Medbo et al., 1988). It has also been concluded by Gastin et al. (1995) that an “all-out” protocol provides a valid estimate of maximal AOD (mAOD). Therefore the objectives of the present study were to measure both the maximal anaerobic capacities of highly conditioned oarswomen by the AOD method and compare this to the AOD of each rower during a 2K race simulation (RS) on the Concept II rowing ergometer (RE). Sixteen highly trained female rowers volunteered for the study. The protocol consisted of 4, four minute...
This study examined the differential effects of three hydration methodologies (carbohydrate, glycerol, and placebo) on the mental performance of ten subjects during three hours of treadmill walking and simulated line digging in a heated environment. Each subject completed one three-hour exercise trial for each hydration methodology. The Paced Auditory Serial Addition Task (PASAT) was used to assess mental performance and each subject was given three practice tests before the first actual trial. The test required subjects to add pairs of single-digit numbers heard via a tape recorder and respond verbally. A set of 61 numbers was given at three speeds for each PASAT test and subjects were given the test three times during each trial. All subjects completed a VO_{peak} test and exercise intensity for each trial was set at 50% of this value. Measures of blood glucose, plasma volume, body weight, rates of perceived exertion (RPE), heart rate, core and tympanic body temperatures, and urine output were recorded at regular intervals throughout each trial. A statistically significant difference between final scores in the carbohydrate and placebo trials was found at the speed of one digit every 1.2 seconds, scores after 90 minutes and at the end of 180 minutes of exercise were significantly higher than baseline scores (p<0.05). The carbohydrate trial showed significantly higher values than the placebo trial.

### Table 1

<table>
<thead>
<tr>
<th>Condition</th>
<th>Control (% max chemot.)</th>
<th>Exercise (% max chemot.)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soleus</td>
<td>9.03±3.03</td>
<td>46.70±1.91</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Plantaris</td>
<td>9.31±2.25</td>
<td>22.31±4.06</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Heart</td>
<td>7.74±2.73</td>
<td>4.28±1.83</td>
<td>p&lt;0.05</td>
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</tbody>
</table>

However, all muscle extracts from the cytosolic fraction reflected a significant decrease in neutrophil chemotaxis following exercise.

### Table 2

<table>
<thead>
<tr>
<th>Condition</th>
<th>Control (% max chemot.)</th>
<th>Exercise (% max chemot.)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soleus</td>
<td>31.79±14.41</td>
<td>9.26±4.63</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Plantaris</td>
<td>16.16±4.68</td>
<td>4.97±2.49</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Heart</td>
<td>47.14±13.69</td>
<td>10.92±4.74</td>
<td>p&lt;0.05</td>
</tr>
</tbody>
</table>

These results indicate that there exists a neutrophil chemoattractant(s) in muscle. It is plausible that this chemoattractant(s), initially contained within the cytoplasm, could feasibly leak out into the interstitium/circulation mainstream during exercise. To investigate a relationship between calpain-like activity (CA^2+--stimulated proteolysis) and neutrophil accumulation as measured by myeloperoxidase (MPO) activity, these activities were
compared in cardiac and plantaris muscles from male Wistar rats (n=10) completing 1 hour of running exercise (25 m/min). Exercise promoted increases (p<0.05) in both calpain-like and MPO activities; ranging from 2.79 to 58.9 U/g wet wt and 0.03 to 4.88 U/g wet wt respectively. Pearson’s correlational analysis (r) on calpain-like and MPO activities for cardiac and plantaris data were 0.97 (p < 0.001) and 0.68 (p<0.05) respectively; with a combined r=0.83 (p<0.001) for both muscles across all conditions. To further investigate the extent to which calpain-like activity may promote neutrophil accumulation, another exercise group (n = 5) was pre-injected with the cysteine protease inhibitor, E64c, 1 hour before exercise. Administration of E64c lowered calpain-like and MPO activities by 66% and 56% respectively (average from cardiac and plantaris muscles). From these results it is concluded that 1) a relationship exists between CA2+-stimulated proteolysis and neutrophil accumulation into striated muscle with exercise; and 2) the calpain system is involved in localizing the neutrophilic response associated with exercise.

Robertson, Sara L. The effects of a 6-week stretching program, using Flex Bands, on the low back and hamstring flexibility of cardiac rehabilitation patients, 1997. M.S., University of Wisconsin-LaCrosse (John P. Porcari). (50pp 1f $4.00) PH 1599

Flex Bands are made of a rubber-material and resemble a large rubber band, measuring approximately 3 1/2 feet long, 1 inch wide, and 1/4 inch thick. They are used to assist the exerciser in performing static and proprioceptive neuromuscular facilitation (PNF) stretching (i.e., the PNF stretches can be achieved without a partner). Thirty stable, male Phase III/IV patients (mean age = 62 years) served as Ss and were assigned to either a control or experimental group. The control group was asked to continue their normal stretching routine (approximately 10 minutes per day/3 days per week) which they had been performing for 3 months prior to the study. The experimental group performed the same stretching program as the control group, except they supplemented several of the stretches with the Flex Band stretches. Both groups were tested before and after the 6 week program for low back and hamstring flexibility using the sit-and-reach test. There was no change (p>.05) in the control group (pre = 12.3 ± 5.6, post = 12.5 ± 5.5), whereas the experimental group had a significant (p<.05) improvement (pre=11.3±3.5, post=14.5±2.1) in flexibility. According to Cooper Clinic norms, both groups were in the lower end of the fair category (30th percentile) for their age group at the beginning of the study. The experimental group improved to the good category (60th percentile) by the end of the study. Thus it appears that the use of Flex Bands is a safe, effective, and innovative method for improving the low back and hamstring flexibility of cardiac rehabilitation patients.


Since 1993 athletes have elected to wear the Breathe Right™ assuming it would increase oxygenation, and improve performance. This study examined the effects of the Breathe Right™ while at aerobic and anaerobic steady state to see if it would increase V̇e and or reduce RPE. Eleven male and 4 female experienced middle and long distance collegiate runners served as subjects. A treadmill VO2max test was performed to determine each individuals, VO2, VCO2, V̇e, RQ, and HR data, a RQ >1 was used to assure max tests for all subjects. Graphic presentation of VO2, and V̇e and HR were used to determine the HR that represented 40% and AT of their max VO2 to perform the submaximal steady state runs. Three testing sessions, one with, one without the Breathe Right™, and one with a placebo were done. Each subject started the testing session at 40% of VO2max running for five minutes, then at AT for an additional five minutes. A survivair mask was used to prevent pressure on the nose. V̇e was measured in the final minute of each 5 minute session, and because the subjects were wearing the survivair mask the RPE’s were measured immediately following each session. Four 1x3 ANOVA’s were performed, showing no significant difference in the athletes’ VE or in RPE with and without the Breathe Right™ or the placebo. This suggests that wearing the Breathe Right™ nasal dilator will not increase oxygenation, at either submax aerobic or anaerobic work in endurance athletes.

Schiller, Eric R. Effect of different cooling methods on thermoregulation following intermittent anaerobic exercise in the heat, 1996. M.S., Texas Christian University (J.B. Mitchell). (77pp 1f $4.00) PH 1606

The purpose was to determine the effect of different cooling methods on reducing core temperature (Tc) following intermittent anaerobic exercise in the heat. Ten moderately trained males (24.8±5.4 yrs, 78.6±8.1 kg, 52.9±6.6 ml/kg/min) performed a VO2max test to determine a workload at 125% of their aerobic capacity. Subjects completed four conditions: PSC (passive cooling in heat chamber at 38° C); PSR (passive cooling in room 21-24° C); FAC (artificial fan cooling at 4.0m/s); and FWC(fan + water). The subjects completed two sets of six 30s sprints separated by 30s of passive rest. Exercise sets were followed by 12-minute cooling periods, and after the second cooling period, subjects completed a TTC (time to cool) segment until peak esophageal temperature (Tes) decreased 1° C. Tc measurements were taken every minute, skin temperatures (Tsk) were recorded pre, post-exercise, and every 2 minutes during cooling. Nude body weights were also taken pre, post-exercise, and post-cooling for
both bouts. Differences were found in TTC means (in minutes) with PSR (21.1±8.9) being significantly lower than both FAC (29.8±8.4) and FWC (27.7±6.3), and PSC (36.6±5.9) being significantly greater than all conditions. No significant differences in Tes cooling rates (°C/min) were found during period 1 (cooling minute 0-12). During cooling period 2 (minute 0-12), however, PSR (0.04±0.016) was significantly greater than FWC (0.01±0.014), and during period 3 (minute 12 to TTC) FWC (.043±.02) was significantly greater than PSC (.016±.014). The data indicate that condition PSR produced the most effective heat dissipation (cooling) rates for period 2 and second fastest cooling rates in period 3 provided by convective heat transfer from the core to the environment. Artificial fan cooling methods impaired convective heat transfer because of reduced Tsk decreasing skin blood flow rates, and these methods relied predominantly on conduction for heat dissipation to the periphery.

Schultz, Mark P. The effect of an NCAA Division I wrestling season on selected physiological variables, 1997. M.S., Brigham Young University (Philip E. Allsen). (51pp 1f $4.00) PH 1605

This study determined the effect of a wrestling season on aerobic capacity (max VO2), anaerobic power (Wingate power test), body composition (hydrostatic weighing) and strength (bench press and leg press) for a NCAA Division I wrestling team. Fifteen varsity wrestlers, aged 18-25, participated in the preseason and postseason testing. Data were analyzed utilizing independent and paired t-tests (p<0.05). The subjects were divided into three groups: combined (all 15 wrestlers); competitive (N=8); noncompetitive (N=7). The combined group found an increase in leg press strength and all of the variables associated with anaerobic power. The competitive group found no changes for any of the selected variables. The noncompetitive group increased in three of the variables associated with anaerobic power. A comparison of the competitive and noncompetitive groups revealed no changes for any variable.

Seamons, Todd D. An electromyographic analysis of selected abdominal exercises, 1997. M.S., Brigham Young University (Mark D. Richard). (131pp 2f $8.00) PH 1607

Abdominal exercises are commonly prescribed for abdominal musculature training and strengthening. This study determined the EMG activity of four selected abdominal exercises on the cumulative abdominal musculature and the influence of the rectus femoris. Twenty four male subjects volunteered for this study. Subjects performed four abdominal exercises (sit-up, Abflex™, AbRoller Plus™, and crunch). Time and amplitude normalized EMG activity were recorded from the upper rectus abdominis, lower rectus abdominis, external oblique, and rectus femoris muscles. A single factor ANOVA with 4 levels was performed on cumulative abdominal muscles to identify differences in exercises (sit-up, Abflex, Ab Roller Plus, crunch). A significant difference between exercises F (3, 69)=9.89, p<.05 was observed. The crunch (746.8% IC 1 RM·ms) and the Abflex (745.6% IC 1 RM·ms) elicited significantly greater EMG activity than the sit-up (639.9% IC 1 RM·ms) and the AbRoller Plus (618.0% IC 1 RM·ms). The crunch was not significantly different from the Abflex; and the sit up was not significantly different from the AbRoller Plus. Personal preference to one abdominal exercise and/or sport specific training will dictate which exercise should be used.

Stewart, Ian Braidwood Can altered body position alleviate post-exercise pulmonary diffusing capacity impairment?, 1997. M.S., University of British Columbia (Ken Coutts). (70pp 1f $4.00) PH 1594

Pulmonary diffusing capacity for carbon monoxide (Dlco), alveolar-capillary membrane diffusing capacity (Dm), and pulmonary capillary blood volume (Vc) are all significantly reduced following exercise. It is unknown if measurement position affects this impaired gas transfer post exercise. Prior to (baseline) and 15 minutes, 1, 2, and 4 hours following an incremental cycle to fatigue Dlco, Dm, and Vc were recorded in 10 healthy male subjects in both a supine and upright seated position. It was expected that the supine post-exercise measurement position would significantly reduce the decrement in Vc and thus Dlco, by facilitating a return of blood to the thoracic cavity. With removal of the 15 minute data, due to the lack of achievement of a resting cardiovascular state (heart rate, systolic and diastolic blood pressure all significantly different from baseline), a significant reduction in Dlco, Dm, and Vc was observed 1, 2, and 4 hours post exercise. (Table 1. Dlco, Dm, Vc means values for supine and seated combined corrected for alveolar volume.

<table>
<thead>
<tr>
<th>Baseline</th>
<th>1 hr</th>
<th>2 hrs</th>
<th>4 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dlco (ml·min⁻¹·mmHg⁻¹·L⁻¹)</td>
<td>5.5±1.03</td>
<td>4.72±0.94*</td>
<td>4.76±0.87*</td>
</tr>
<tr>
<td>Dm (ml·min⁻¹·mmHg⁻¹·L⁻¹)</td>
<td>7.09±1.19</td>
<td>6.11±0.31*</td>
<td>6.24±1.06*</td>
</tr>
<tr>
<td>Vc (ml·L⁻¹)</td>
<td>15.09±4.91</td>
<td>12.80±3.98*</td>
<td>12.07±3.74*</td>
</tr>
</tbody>
</table>

*significantly different compared with baseline (p<0.05)

There was a significant difference between positions for Dlco (4.66±0.98 vs. 5.22±0.89, seated vs. supine, p=0.022) and Dm (6.28±1.36 vs. 7.00±1.32, seated vs. supine, p=0.016), but there was no position effect for Vc. Nor was there any significant interaction between the positions over time for Dlco, Dm, or Vc. The change in Dlco appears to be primarily due to a decrease in Vc. The limited decrease in Dm in the supine position was likely due to a redistribution of blood within the lung, due to gravity, enhancing the...
surface area available for diffusion. Although the mechanism for the reduction in Vc cannot be determined from this data, a passive relocation of blood into the periphery due to gravity can be discounted, indicating that active vasoconstriction of the pulmonary vasculature and/or peripheral vasodilatation maybe occurring post-exercise. This is the first data to indicate that the maintained diffusion impairment is independent of measurement position.

Swan, Jacob G. Glycerol-induced hyperhydration during long term exercise in a heated environment, 1997. M.S., University of Montana (Brent C. Ruby). (106pp 2f $8.00) PH 1592

The ability to hyperhydrate has been shown to negate the deleterious effects of hypohydration due to long-term exercise in a heated environment. The purpose of this study was to examine the efficacy of two hyperhydration strategies during exercise-heat stress and the resulting physiological strain. Ten trained subjects (5 M, 5 F) performed two 3 hour exercise trials in a heat chamber (32° C). Exercise trials included two hydration regimens and were completed in a randomized double blind fashion. The experimental solution contained 1 g glycerol/kg BW mixed with 21.4 ml H₂O/kg BW. The control solution was the same as the experimental solution without the addition of glycerol. Solutions were ingested over a period of 90 minutes prior to the extended work bout. During the work bout, subjects completed treadmill walking (50% VO₂ max) and simulated fire line building. This design was used to best simulate a typical wildland firefighting work protocol. Subjects were given water to drink during the exercise so that the total amount of liquid taken in was equal to 5 ml/kg per 30 minutes, accounting for the amount of saline needed to keep the venous catheter open. Following the extended work bout, a performance trial was done on the digging treadmill. No statistical difference was found between the two hydration strategies for the variables of heart rate, plasma osmolality, core temperature, sweat rate, %body weight loss, plasma volume changes, and post exercise performance. The data did show that the glycerol hyperhydration strategy resulted in a significant reduction in urine output over the length of the entire trial (p<0.05). These data suggest that glycerol is distributed throughout all fluid compartments and not just extravascularly as previously thought. Based on the data collected it was concluded that there was no difference between the two hyperhydration strategies when euhydration was maintained during exercise-heat stress. Further research should consider the mechanisms of glycerol’s ability to increase TBW and gender differences in response to an exercise-heat stress.


This study determined the extent to which a 12-week exercise program using the CardioGlide, CrossWalk, or treadmill walking was associated with changes in cardiovascular endurance, dynamic strength, and flexibility; and compared the effects of training on the different pieces of exercise equipment. Sixty-seven sedentary men and women with a mean age of 39.8 (+/-6.9) participated in the study. A pretest, 12-week training period, and posttest design was used. Cardiovascular endurance, upper and lower body strength, and flexibility were assessed at baseline and following the 12 weeks of training. Subjects trained 3 days per week over the course of the 12-week intervention, during which exercise duration and intensity were increased to 30 minutes at 80% of age-predicted maximum heart rate. Results showed all three groups significantly improved in all areas. However, there were no significant differences among the groups with or without controlling for age a significant improvements in cardiovascular endurance, dynamic strength, and flexibility. Moreover, there appears to be no advantage to using one type of exercise machine over the others among previously sedentary adults for a 12 week period. Keywords: Cardiovascular endurance, dynamic strength, exercise, fitness, flexibility, home exercise equipment, treadmill.

Torjman, Marc Acute effect of incremental exercise on leptin in normal humans, 1997. Ph.D., Temple University (Albert M. Paolone). (218pp 3f $12.00) PH 1586

This study investigated the circulating leptin response to exercise intensity and post exercise recovery, using incremental exercise to maximal oxygen consumption (VO₂ max), in normal untrained male subjects. Six healthy males 22-41 years of age, with normal weight and percent body fat, participated in this study. To evaluate the acute leptin response to exercise intensity, a control and an experimental session were conducted with each subject serving as his own control. Control and exercise experiments were scheduled 1 week apart. The following parameters were measured pre, during, and post exercise after an overnight fast: serum leptin, insulin, glucose, free fatty acids (FFA), and glycerol. Whole blood hemoglobin and hematocrit were sampled for calculation of plasma volume changes. Oxygen consumption and resting energy expenditure were assessed using ventilatory measurements with respiratory gas analysis. The major finding of this study was that of a different recovery pattern of leptin concentration following maximal incremental exercise compared to control. Leptin concentrations increased at 30 min to near baseline values until 4 hr post exercise while
control values continuously declined with time to approximately 25% below baseline. A significant correlation between leptin and percent body fat \((r=\cdot88)\) was found, in the narrow range of leptin concentrations of our subjects, providing more evidence that leptin is a sensitive indicator of adipose tissue mass. Resting energy expenditure was inversely correlated to leptin \((r=\cdot80)\) during control and the correlation was similar with exercise. A significant positive correlation was found between leptin and glucose during the control experiment \((r=\cdot93, p=0.001)\) but an inverse correlation \((r=\cdot79)\) was seen during post exercise recovery as leptin concentrations rose and glucose concentrations returned toward baseline values. Insulin concentrations decreased with increasing exercise intensity and the correlations between leptin and insulin, during control and post exercise recovery, were significant \((r=\cdot63, p=0.04\) and \(r=\cdot61, p=0.047\), respectively) and followed the same pattern as glucose concentrations. Serum FFA decreased as exercise intensity increased while the reverse occurred for serum glycerol concentrations. Glycerol was not significantly correlated to serum leptin \((r=\cdot41, p=0.21)\) in the control experiment but was inversely correlated \((r=\cdot80, p=0.003)\) to leptin with exercise.

Umscheid, Jill M. *The influence of aerobic vs. anaerobic exercise on thyroid hormone concentrations*, 1997. M.A., University of North Carolina-Chapel Hill (Anthony C. Hackney). (77pp 1f $4.00) PH 1578

The purpose of this study was to examine the effects of aerobic and anaerobic exercise on the thyroid hormones in trained individuals. Nine experimental subjects completed three trials, a resting control, an aerobic exercise session, and an anaerobic interval session. Free \(T_4\) free \(T_3\) and the free \(T_4/T_3\) ratio were measured pre-trial, immediate and 12 hours post-trial. Results \((p<0.05)\) showed no significant differences between the control, aerobic or anaerobic experimental trials for free \(T_4\) or free \(T_3\). However, there was a significant decrease in the \(T_4/T_3\) ratio immediately following and 12 hours after completion of the anaerobic interval experimental session. The decrease in the \(T_4/T_3\) ratio was interpreted as an increased peripheral conversion of free \(T_4\) to free \(T_3\) following anaerobic interval exercise. The mechanism for this increased conversion rate is presently unclear.


In an effort to determine current levels of obesity and its possible determinants, a questionnaire was administered to 219 female African-American students at a northeastern, historically black university (HBCU) during the Spring of 1997. Body Mass Index (BMI) was used as the measure of obesity. The Multidimensional Body Self-Relations Questionnaire (MBSRQ) by Brown, Cash and Mikulka was used to assess multiple attitudinal aspects of body image. The Contour Drawing Rating Scale by Thompson and Gray was used to measure the level of body dissatisfaction by calculating the discrepancy between an individual’s perceived and desired body sizes. A Physical Activity Questionnaire was investigator generated to assess student’s physical activity practices, and a Nutrition Questionnaire was generated to assess student’s dietary practices. Mann Whitney analyses were conducted to determine whether differences existed between freshman and seniors in regards to BMI and the independent study variables. Kendall Correlations were performed to determine whether any apparent relationship existed between the independent variables and BMI. Last, a Stepwise Multiple Regression was conducted to identify those factors of body image that may help predict obesity. Five significant relationships were found among the ten subscales of the MBSRQ and BMI: Low negative correlations were found between BMI and Appearance Evaluation \((r=\cdot23, p<0.001)\), Health Evaluation \((r=\cdot14, p<0.05)\), and Body Satisfaction Scale \((r=\cdot26, p<0.001)\). A moderately high positive relationship was found with Self-Classified Weight \((r=\cdot65, p<0.001)\), and a low positive relationship with Overweight Preoccupation \((r=\cdot26, p<0.001)\). No relationship was found between BMI and Appearance Orientation, Fitness Evaluation, Fitness Orientation, Health Orientation, or Illness Orientation. A significantly positive relationship was found between BMI scores and discrepancy scores of the Contour Drawing Rating Scale \((r=\cdot60, p<0.001)\). Significant differences were found between freshman and senior women only in regard to MBSRQ subscales for Fitness Evaluation, \((p=0.05)\), and Fitness Orientation \((p<0.05)\). Last, a Stepwise Multiple Regression revealed that only Current Body Size, which accounted for 63.16 percent of the variation, was an important predictor of BMI scores.


This study analyzed metabolic responses (i.e., steady state absolute and relative oxygen consumption, heart rate, RER, RR, \(V_{O_2}\), cadence, and RPE of 19 females while walking/ jogging in a laminar flow resistance pool. Subjects jogged in place against a progressive anterior laminar flow of water in a Swim-Ex pool while immersed to arm pit level. Water temperature averaged 31°C. Flow analysis determined a strong positive linear relationship between the swimometer graphic scale for increasing laminar flow and time integrated digital flow analysis. There were no significant differences between no flow and the \(0.5\,\text{m·sec}^{-1}\) for all variables except RER. RER values with a mean peak of 1.05 significantly \((p<0.05)\) increased across all three conditions. In comparison, there were significant \((p<0.05)\)
Significant (p<.05) positive correlations between oxygen recovery in both sessions. The blood samples were collected at 20, 40, and 60 min. of exercise (no exercise). Blood samples were analyzed for (steady state absolute and relative oxygen consumption, heart rate, RR, V\text{\textsubscript{E}}) and RPE between the no current and .9 m\text{sec}\textsuperscript{-1} and between .5 m\text{sec}\textsuperscript{-1} and .9 m\text{sec}\textsuperscript{-1}. Significant (p<.05) positive correlations between oxygen cost, RER, V\text{\textsubscript{E}} and cadence were only found during the .9 m\text{sec}\textsuperscript{-1} flow condition. Results suggest that laminar flow affects energy expenditure when utilized for jogging at arm pit level.


This study identified the associations between physical activity (PA) and hypertension risk in a sample of 167 African-American men n=64) and women (n=103) ages 18-65 years. PA was indirectly measured using a questionnaire. Data were analyzed using univariate, Pearson product-moment correlation, t-test, ANOVA, chi-square test, analyses of covariance, and multiple logistic regression analyses. Results showed significant associations between vigorous sports participation and systolic blood pressure in men (r=.32, p<.05) and diastolic blood pressure in women (r=-.28, p<.05). Results showed modest associations between kcals of energy expended to meet the ACSM vigorous PA recommendation and systolic blood pressure in men (r=.28, p<.05). There were no associations between the subjects who met the CDC-ACSM moderate recommendation or the ACSM vigorous recommendation and hypertension status (p>.05). The odds ratios for a protective effect of meeting the CDC-ACSM moderate or ACSM vigorous recommendations were not statistically significant (p>.05). Results suggest that vigorous sports participation may have a protective effect against higher blood pressure levels.


Obesity is a medical condition associated with greater risk for development of cardiovascular disease, and diabetes. Leptin is the obese gene protein that regulates body weight through its effects on food intake and energy expenditure. Deficiency or mutations of leptin and its receptor results in obesity in rodents. Administration of leptin to obese mice increased the energy expenditure, and decreased the body weight and the body fat. The purpose of this study was to characterize the response of leptin to prolonged exercise. Six fasting healthy males with normal body fat performed two tests: exercise for 60 min. at 50% of oxygen consumption, followed by 4 hr of recovery, and a control session (no exercise). Blood samples were collected at 20, 40, and 60 min. of exercise, and at 5, 15, 30, 60, 120, and 240 min. of recovery in both sessions. The blood samples were analyzed for leptin, insulin, glucose, free fatty acids, and glycerol. Oxygen consumption was measured throughout the study. The results revealed that leptin was higher at 60 min. vs. baseline in the exercise session. In the control session, baseline leptin value was not different with any recovery time point in the exercise session. In contrast, baseline leptin was lower from every time point examined during the recovery in the control session. During exercise, free fatty acids and glycerol increased, insulin decreased, and glucose remained unchanged. In the recovery, glycerol, free fatty acids, insulin, and glucose were higher after exercise compared to control session. During the control session, leptin correlated positively with insulin (r=.63, p<.05) and glucose (r=.79, p<.05), and negatively with oxygen consumption (r=.84, p<.05). During the exercise sessions leptin correlated negatively with insulin and glucose (r=-.62, r=-.70, p<.05), and positively with oxygen consumption and glycerol (r=.93, r=.83, p<.05). Significant correlations were also found between leptin, and resting energy expenditure (r=.80, p<.05) and body fat (r=-.88, p<.05). Based on the results of this study it was concluded that prolonged physical activity prevents fasting-induced leptin reduction. In addition, fasting serum leptin levels correlate positively with insulin, glucose, and body fat, and inversely with resting energy expenditure.

Zderic, Theodore W. *Comparison of substrate utilization patterns in males and eumenorrheic females during submaximal exercise*, 1997. M.S., University of Montana (Brent C. Ruby). (81pp 1f $4.00) PH 1580

The purpose of this investigation was to examine substrate oxidation and plasma glucose kinetics in males and regularly menstruating females during submaximal exercise. Five recreationally trained males and females (VO\text{\textsubscript{peak}} =61.7±2.9 vs 48.6±3.0 ml·kg\textsuperscript{-1}·min\textsuperscript{-1}, respectively) performed cycle ergometry exercise for 25 minutes at ~70%VO\textsubscript{2} of their respective lactate threshold (LT), immediately followed by 25 minutes of exercise at ~90%VO\textsubscript{2} LT. Female subjects were tested during the follicular (MF) phase (4-6 days after onset of menses) and during the luteal (L) phase (22-27 days after onset of menses). All subjects were tested after an 11 hour fast and within two hours of waking. Carbohydrate and fat oxidation were determined with indirect calorimetry (respiratory exchange ratio and VO\textsubscript{2}) while plasma glucose production (Ra) and utilization (Rd) were determined by a primed (30 mmo l·kg\textsuperscript{-1}) constant infusion (0.42 mmo l·kg\textsuperscript{-1}·min\textsuperscript{-1}) of 6,6-\textsuperscript{2H}glucose. During exercise at 70% LT (~40-50% VO\textsubscript{2peak}), males and females, regardless of menstrual phase, oxidized similar proportions of carbohydrate and fat. At rest and during 70% LT, there were no differences between genders and menstrual phases in plasma glucose Ra and Rd. At 90% LT (52-62% VO\textsubscript{2peak}), males and MF females oxidized similar proportions of carbohydrates and fats and had similar glucose Ra and Rd (mmol/kg lean
body mass-1/min-1). However, during the L phase, females tended to oxidize proportionally less carbohydrate and more fat compared to the males (p>0.05) and the MF phase (p<0.05). In accord with the decrease in carbohydrate oxidation at 90%LT during the L phase, plasma glucose Rd was lower than in males and the MF phase (both p<0.05). With the present data, it cannot be determined whether the differences in substrate oxidation are due to increased lipid availability during the L phase or a decreased glycolytic flux. Future studies in this area should employ the muscle biopsy technique to determine the pre-exercise muscle glycogen concentrations. These results suggest that conclusions about gender differences in substrate oxidation and plasma glucose utilization during exercise depend upon the comparison exercise intensity and the menstrual phase of the females subjects.

**HEALTH EDUCATION**

Fitzpatrick, Mary Ann  

A prospective quasi-experimental pretest-posttest design was used to study the effects of a Restraint Reduction Education Program with and without a Critical Care Restraint Decision Guide on the incidence of physical restraint use, untoward events with complications, and untoward events without complications among elderly patients in critical care units. Use of psychoactive drugs before and after the intervention was also tracked. Organizational theory provided the theoretical framework. The site was a 701-bed not-for-profit urban teaching hospital. Incidence of restraint use, untoward events with and without complications, and psychoactive drugs was tracked from January 1996 to December 1996. In July 1996, 243 nurses from adult critical care and intermediate units received an education program about restraints and a critical care decision tool guiding restraint use (Group 1); an education program about restraints (Group 2); or no intervention (Group 3). The education intervention focused on increasing knowledge and changing perceptions about use of restraints with agitated/restless patients. Data on restraint use, untoward events with and without complications, psychoactive drugs and knowledge and perception of restraint use were analyzed using statistical process control charts, repeated measures ANOVA and MANOVA. The education program with a critical care decision guide was not more effective than the education program alone in reducing incidence of restraint use. There was a trend toward less restraint use in all three groups. Incidence untoward events with and without complications and use of psychoactive drugs did not change as a result of the intervention. Nurse subjects in all three groups showed significant gains in knowledge scores from pre to post intervention. However, group membership had no effect. Perceptions about restraint use changed among the subjects in the two experimental groups from pre to post intervention, with both groups after the education intervention rating restraint use as less important in managing restless and agitated behavior. An educational program targeted at increasing knowledge and changing perceptions about restraint use appears effective intervention in reducing restraint use in elderly critical care patients. Reduction in restraint use did not appear to increase patients’ risk of untoward events.


The attitude scale was tested on a pilot group and determined to have an acceptable level of internal consistency reliability (r=.86). The t-test analysis produced significant differences in attitude scores between the two groups (p<.002). Multiple regression revealed that income, perception of health, and exercise history significantly predicted exercise group membership. The socio-demographic factors of age, education, and gender did not add significantly to the prediction of exercise group membership. Chi-square analysis showed that living arrangement was significantly related to exercise (chi-square=8.38). Work status and former occupation did not significantly discriminate between the two groups. Thematic coding revealed that lack of time, access to facilities, and little or no interest were the primary perceived barriers to exercise. This study addresses the problem of increasing levels of exercise and improving programming for the elderly. Future research is necessary to target the poor and minority elderly, and for developing a strategic plan to include regular exercise as an adjunct to current health-care services.

George, Joelle  
*Effect of CD-ROM enhanced lectures on substance abuse test scores*, 1997. M.S., Brigham Young University (L. McKay Rollins). (44pp 1f $4.00) HE 608

This study examined the effect of CD-ROM enhanced lectures on substance abuse test scores. The participants consisted of two groups of students enrolled in general education health courses. One group received a CD-ROM enhanced lecture, while the other group received traditional lecture only. Pretest and posttest scores for both groups were evaluated to determine the effect of each lecture format. The results of a two-tailed t-test with t-value .43 and p<.672 at 42 degrees of freedom revealed that test scores for students receiving a CD-ROM enhanced lecture (n=23) were not significantly different than the scores for students receiving the traditional lecture (n=21).
This study determined if evaluating blood pressure, serum cholesterol levels, and individual CVD risk factors of elementary school teachers influenced their attitudes and intent to teach cardiovascular health education. Teachers at 12 elementary schools were also questioned about the importance of, and intent to teach cardiovascular health topics. While there were few statistically significant differences between the control and the experimental groups, the data indicated blood pressure and serum cholesterol evaluations increased the importance teachers placed on selected cardiovascular health topics. There was a significant difference between the control and experimental groups on how they responded to the question: “Do you plan to teach eating fruits and vegetables every day?”

Haj-Ahmad, Jumana Knowledge about menopause and attitudes toward menopause among the Palestinian women living in the West Bank and Gaza Strip, 1996. M.S., Brigham Young University (L. McKay Rollins). (58pp 1f $4.00) HE 605

Most studies investigating menopause have come from the Western world, with very few available from the developing countries. This study determined knowledge and attitudes toward menopause among the Palestinian women living in the West Bank and Gaza Strip. It also examined the relationship between women’s knowledge and attitudes toward menopause and their background characteristics. Sources of information about menopause were also assessed. Data were collected from 138 women aged 39 to 60 years living in the West Bank and Gaza Strip. The study found that women have a moderate level of understanding about the various aspects of menopause. They have a misconception about age of menopause which could be attributed to folk belief. Women with more education and with accessible journals and books as their source of information about menopause performed better on the knowledge questionnaire. Less than half of the women questioned knew about estrogen drugs for the alleviation of menopausal symptoms. Attitudes of women toward menopause were overall positive. A low positive correlation existed between the monthly income and attitudes of women toward menopause. Women who had relatives and friends as their main source of information about menopause had more positive attitudes toward menopause. No correlation existed between having health professionals as the main source of information about menopause and knowledge and attitudes of women toward menopause. Health professionals could provide more information to the Palestinian women about the physiological changes occurring, and about the availability of treatment to relieve their symptoms.

Jankovich, Gina Comparison of unstructured feedback to structured feedback on initial learning of CPR, 1997. M.S., Brigham Young University (Alton L. Thygerson). (55pp 1f $4.00) HE 607

The various methods of CPR training may not be producing high levels of performance, and retention of CPR skills deteriorates rapidly, pointing to poor initial learning of CPR. Initial learning of CPR can be significantly enhanced by feedback. We compared the impact of unstructured feedback to the impact of structured feedback (a detailed skills checklist) on initial learning of CPR, as measured by correct CPR performance, in a population of university students. The pooled variance t-statistic for the measure of skills performed correctly was -2.06, which was significant. On average, the structured feedback group made one fewer mistake than the unstructured feedback group. Although this is a small increase, it could mean the difference between adequate and inadequate CPR. The checklist is an inexpensive, easy-to-use instruction tool. The students and especially instructors reported very positive reactions to the checklist.

Knudson-Buresh, Alana D. A study of health insurance coverage and health care utilization in North Dakota, 1998. Ph.D., Oregon State University (Chunhuei Chi). (213pp 3f $12.00) HE 611

Access to health care in North Dakota, a frontier state, has been a widely debated policy issue. Historically, the focus of North Dakota health policy efforts has been directed to issues pertaining to the provision of health care services. During the economic recession of the 1980s, an out-migration of North Dakota residents left the state with a smaller population in 1990 than it had in 1930, the only state to experience this population shift. In response to these demographic shifts, the North Dakota Health Task Force was formed to develop a health care reform strategy that addressed geographical and financial health care access issues. Over 2,000 North Dakota families were surveyed to provide the task force and other policy makers with information about North Dakota residents’ health insurance coverage and health care utilization. The purpose of this research was to examine what variables impact access to health insurance coverage and utilization of health care services in North Dakota. Three access areas were addressed: financial, geographical and cultural. To examine financial access, health insurance coverage was examined. Among the non institutionalized ND residents, the greatest proportion of uninsured were young adults; although, all North Dakotans were found to be at risk. The health insurance findings mirrored many other studies’ findings in which males, part-time workers and rural dwellers were the most likely to go without insurance. In addition, health insurance appears to serve as a gatekeeper for obtaining health care services. A surprising finding was
that geographic barriers were not a hindrance to obtaining health care. Yet, Native Americans covered by Indian Health Service were less likely to obtain health care than the uninsured indicating there may be some cultural barriers for this population. Other findings included: the uninsured go without health care and report lower health status more frequently than the insured; poverty level is positively correlated with health status; among those with no regular source of health care, the insured report they do not need health care while the uninsured report they cannot afford it. Comparisons of rural and urban dwellers also are included in the analyses.

Nelson, Marielle Use of CD-ROM in teaching nutrition, 1997. M.S., Brigham Young University (L. McKay Rollins). (43pp 1f $4.00) HE 609

This study examined the effect of CD-ROM enhanced lectures on nutrition test scores. The participants consisted of three groups of students enrolled in general health courses. The first group received a CD-ROM enhanced lecture, the second group received traditional lecture only, and the third group received no lecture at all. Pretest and posttest scores for all three groups were evaluated to determine the effect of each lecture format. No statistical significance was found between student test scores of those receiving CD-ROM enhanced lecture in the area of nutrition and those receiving traditional lecture only.

Reid, Colleen Women organizing for women: disjunctures in the consumption and provision of health and wellness services for single mothers, 1997. M.A., University of British Columbia (Wendy Frisby). (173pp 2f $8.00) HE 603

Current social services provided in Canada for low-income women are primarily ‘crisis management’ in nature as they almost exclusively provide safe housing, adequate nutrition or employment training, and many are under severe financial pressure due to a shifting public policy. As a result, services offered for single mothers living below the poverty line rarely deal with health promotion in terms of physical activity, even though it has been demonstrated that socioeconomic status is a key determinant of health (Frankish, Milligan & Reid, 1996). ... The purpose of this case study of the YWCA was to examine the provision and consumption of health and wellness services for low-income single mothers. Research questions were posed in four areas: i) what meanings do low-income single mothers and YWCA service providers associate with the provision of health and wellness services; ii) how are health and wellness services located within the political, social and economic context of the YWCA; iii) are there points of disjunctures between the provision and consumption of health and wellness services for low-income single mothers; and iv) if points of disjunctures are uncovered, what are the possibilities for emancipatory change in service provision? ... The research methodology involved an examination of: 1) The meanings and experiences of eleven low-income single mothers participating in the FOCUS Pre-employment Training Program which has a wellness component. The data collection strategies included focus groups; a validation meeting the original participants; observations during group meetings and program sessions; and informal discussions. 2) The meanings and experiences of five service providers who were either facilitators of FOCUS or occupied management positions in the YWCA. The data collection strategies included one-on-one semi focused interviews; observations of program meetings, group and informal discussions; and a final meeting to discuss potential change. 3) Relevant documents, including brochures, pamphlets, reports and promotional flyers to obtain background and contextual information about the YWCA. The data was analyzed using inductive analysis and the qualitative software program, Q.S.R. NUD.IST. The overall finding was that neither the service providers nor the single mothers viewed wellness as a priority. At the organizational level, the explanation for this finding was that physical activity opportunities were not valued by the funders, whereas employment training was their primary concern. ... Based on the single mothers and the service providers’ suggestions, four major recommendations for change were provided. First, the participants should be central to and fully collaborative in the organizational processes of the YWCA. Second, if the women involved in the program value physical activity, they should determine ways in which it can become a part of their daily reality. Third, for those involved with the planning and implementation of the FOCUS program, the role of the funders vis a vis the needs of the participants service delivery established. Finally, the YWCA’s approach to wellness service delivery should be evaluated and re-conceptualized so that it fulfills and is congruent with the YWCA mission statement. What remained unexplored by the service providers was the potential for the women to redefine hegemonic notions of physical activity (Birrell & Richter, 1987) and to be involved in a meaningful and self expressive form of activity (Hargreaves, 1990). By listening to the various perspectives and situating experiences within the organizational, political, economic and social contexts, this study provided the beginnings of a critical understanding of the tensions involved in women organizing for women to promote physical activity.

Reid, Dana Claire The acute effects of conservative surgery plus radiotherapy on the functional capacity and psychological well being of women with early stage breast cancer, 1997. M.S., University of British Columbia (Donald C. McKenzie). (104pp 2f $8.00) HE 602

Seven women (54.1±5.2 yrs) diagnosed with Stage I or II breast cancer who were treated with surgery and adjuvant radiotherapy served as subjects in a prospective investiga-
tion evaluating functional capacity and psychological well-being before, during, and after therapy. Physical measurements included height, body mass and sum of five skinfolds. Measures of spirometry (FVC, FEV1, FEF25-75%, FEV1/FVC, MVV) and single breath diffusing capacity of carbon monoxide (DLCO, V̇A, DLCO/VA) were recorded using a Collins DS I System (Warren E. Collins). To determine maximal oxygen consumption (VO2max), minute ventilation (VE), heart rate (HRmax) and peak power output (PPO), subjects cycled until exhaustion on an electronically-braked cycle ergometer (Lode BV Excalibur V2.0). Percent arterial oxygen saturation (%SaO2) was monitored with a pulse oximeter (Ohmeda Box 3740). Subjects completed the Self-Esteem Questionnaire (Robson, 1989), a modified Quality of Life Index (Padilla et al., 1983), and the Body Image Visual Analogue Scale (Mock, 1993). Measures were recorded after biopsy, prior to further surgery (Test 1), and repeated three weeks after surgery (Test 2), two weeks after commencement of radiotherapy (Test 3), as well as one week (Test 4) and two months (Test 5) after radiotherapy completion. Surgical, pathological and radiotherapy details were recorded, as was smoking history. In addition to relating pre-diagnostic activity, subjects kept a weekly log to record and subjectively rank their involvement in physical activity during treatment. Repeated measures analysis of variances (RM ANOVAs) were implemented with subsequent Tukey HSD post-hoc analysis. A probability value of <0.05 was considered significant for all tests. All pulmonary function measures, excluding FVC and V̇A, decreased significantly between Test 1 and Test 5; changes were attributed to pulmonary inflammation. Nevertheless, deviations in spirometry and diffusing capacity were within normal limits, likely contributing to the maintenance of maximal exercise capacity. Body image and quality of life were significantly depressed at mid-radiation, yet self-esteem did not change over the course of treatment. Activity, smoking and age did not appear to play a role in either physiological or psychological health, yet sample size was small.

Solberg, Jim C. Development of a recipient based guide for coping with the process of liver transplantation, 1997. M.P.H., University of Wisconsin-LaCrosse (Kenneth C. Becker). (85pp $4.00) HE 610

Thousands of U.S. citizens are fortunate to be alive today after having their lives spared by liver transplantation surgery. While this second chance at life is a phenomenon for which all are extremely grateful, recipients often find that this situation poses many new challenges and uncertainties. Medical, social, psychological, and financial circumstances unique to the recipient population are taken in stride by some, while causing considerable distress for others. This project is a compilation of first-hand information and insights relating to these issues gained through interviews with recipients and transplant medical staff. The researcher has combined these results with his own transplant experience and a review of relevant literature to prepare this guide for liver transplant candidates, recipients, and their loved ones. This recipient based guide provides a relevant source of information, advice, and comfort for those going through the process of liver transplantation. It will be an easily read resource intended to supplement literature already available.


Total body, waist, hip and thigh percent fat (%fat), waist divided by hip fat in grams (WHR-D) and the ratio of waist plus hip divided by thigh fat in grams (R WH/T) were determined in 210 premenopausal women (18-31 y). Cardiovascular disease (CVD) risk variables were assessed in a fasted serum sample and included: total cholesterol (CHOL), triglyceride (TG), glucose (GLUC), high density lipoprotein (HDL-C), low density lipoprotein (LDL-C), apolipoprotein A-I (APO A-I) and lecithin: cholesterol acyltransferase activity (LCAT). Systolic and diastolic blood pressure (SBP, DBP) and maximum oxygen uptake (VO2 max) were also measured. Since total body %fat and weight were highly correlated (r=0.90) with regional fat distribution variables (r=0.69 to 0.96), further correlational analyses controlled for these variables. As a result, the following correlations were significant (p<0.05): Waist and %fat, WHR D and R WH/T with TG (r=0.20, 0.22, respectively). Thigh %fat with LCAT (r=0.38), WHR-D and R WH/T with CHOL (r=0.18, 0.18, respectively); and R WH/T with HDL-C (r=0.16). ANOVA demonstrated the following: Women with higher waist %fat (>31%, n=109) had higher CHOL, LDL-C, TG, SBP, DBP, LCAT and GLUC. Oral contraceptive (OC) users (n=116) had higher CHOL, LDL-C, TG, APO A-I and SBP. Older women (25-31 y, n=88) or those with more years beyond menarche (>11 y, n=102) had higher CHOL. Women with higher VO2 max (>31 ml/kg/min, n=62) had lower GLUC. In conclusion, an upper body fat distribution was related to a more adverse CVD risk profile in these premenopausal women with the strongest and most consistent relationships observed with WHR-D and R WH/T. Blood pressure and GLUC were mediated more by weight and total body %fat than by fat distribution. Although OC use was related to a more unfavorable CVD risk profile, there were no differences in regional fat distribution between the groups. Age and years postmenarche had little effect on CVD risk, but were related to increased weight, total body and hip %fat. Thus, identification of regional fat distribution and development of effective interventions to ward off potential risk of CVD are warranted in young women.
The purpose of this study was to examine the effects of the independent variable of individual leisure counseling (ILC) on the dependent variables of perceived freedom in leisure, perceived self-efficacy, depression, and abstinence of adults in a residential treatment program for substance dependence. This experimental study implemented the Pretest-Posttest Control Group, Single Unit Design. Forty study participants were recruited from a six-week residential treatment program. By random assignment, 20 subjects were placed in the control condition and 20 in the treatment condition. The treatment condition subjects participated in six individual, weekly one hour ILC sessions. All subjects were administered the following pre and posttests: Perceived Freedom in Leisure, Situational Confidence Questionnaire, and Beck Depression Inventory. The results of the data analyses demonstrated that although there were significant mean score improvements within both the control and treatment conditions, there were no significant mean score differences between control and treatment conditions. Abstinence status at 30 days post-treatment was assessed. No significant relationships were observed between abstinence and individual leisure counseling, perception of freedom in leisure, self-efficacy, and level of depression. Recommendations for future research and treatment implications were presented. Primarily, future studies are needed to examine the treatment efficacy of the ILC model in a similar standard treatment program, measuring quality of recovery over an extended period of time. In addition, future studies are needed to examine the effectiveness of ILC as a treatment component in conjunction with other types of alcohol and other drugs (AOD) programs (e.g., outpatient and prevention), or as a free-standing program. Other recommendations include the need to add additional qualitative and quantitative measurement tools to examine LC’s impact on social validity, cost effectiveness, client acceptability and satisfaction, treatment compliance, retention, overall functioning, and quality of recovery. The study of client motivation level and level of psychosocial functioning is needed to examine appropriate client-treatment match. Treatment implications included the implementation of ILC intervention as a results based treatment; the inclusion of follow-up sessions; and the incorporation of homework instruction handouts and client workbooks to record session highlights.


Research regarding the out of school opportunities for youth is limited. Identifying a single accepted definition of quality programming for school-age youth proves to be a difficult task. This study presents an analysis of municipal park and recreation After School Program Directors’ perceptions of quality attributes and the inclusion of those attributes in their programs. A telephone survey identified municipal park and recreation After School Program Directors in the State of Washington. All were included in a mail survey. Directors were asked to evaluate the importance of child care quality attributes to a quality school-age program, and their own performance of each. An importance-performance analysis identified each attribute’s perceived importance to a quality program, and perceived performance by the Directors surveyed. This found 28 attributes in the “Keep up the Good Work” category. Seven attributes fell into the “Concentrate Here” category, requiring additional administrative attention. Only one, “Use of media such as television, films, and videotape”, was found a “Low Priority” to Directors. None of the 36 attributes were in the “Possible Overkill” area, suggesting that Directors are not putting effort or resources into unimportant attributes. Analysis of variance found few significant differences between perceived importance across either highest level or type of education. An examination of importance across Directors’ highest level of education found that those with an associates degree placed greater importance on the “Use of media, films, and videotape” than did others. Directors with high school diplomas and bachelor’s degrees placed greater importance on “Collaboration between staff and administrators in program planning”. Finally, “Constant adult supervision of children” was more important to Directors with bachelor’s degrees. A comparison of importance across the type of education received compared those with Recreation, Education, and Other degrees. This analysis found that Recreation and Education professionals both placed greater importance on the “Use of media such as television, films, and videotape”. Additionally, Education majors found “Periodic evaluation of programs” more important than other respondents.

Krueger, Deborah L. Obstacles adapted physical education specialists encounter when developing transition plans, 1997. M.S., University of Wisconsin-LaCrosse (Patrick DiRocco). (57pp 1f $4.00) RC 514

Adapted physical education (APE) specialists (N = 207) serving students in Wisconsin were surveyed to determine what obstacles they encountered when developing transition plans. A total of 155 Leisure Transition Question-
naries were returned, representing a 75% return rate. Cooperative Educational Service Agency (CESA) employees returned 24 of 29 questionnaires while specialists employed by school districts returned 131 of 178. Data were analyzed by student population size and employer. The Wisconsin Department of Public Instruction 1996 - 1997 School Directory and District Ranked Enrollment Statistics were used to establish seven student population sized groupings and to access the phone numbers of schools and CESAs. Results indicated that 13 of the 24 (54%) CESA specialists had written a leisure transition plan (LTP) while only 20 of the 131 (15%) school employees had written an LTP. Sixty-four percent of the 122 APE specialists, not having written an LTP, said that one of the reasons they had not written an LTP was because they had never been asked to be part of transition planning. Another 41% indicated that they were not aware of what the APE specialist’s role is in transition planning. Those respondents having written an LTP (33) identified the obstacles that they had encountered and scored how serious an impact the obstacle had on the development of LTPs. Although the same 8 obstacles seem to be identified as serious barriers to transition, by those having written an LTP, analyses of variance showed significant differences in the mean scores of obstacles as rated by CESA and school district employees. Results suggest that CESA employees are encountering barriers when they are planning services for students in the community setting. School district employees seem to find their own lack of experience in writing LTPs a barrier. High percentages of both CESA and school district employed APEs indicated that student social isolation and transportation issues have a severe impact on the development of LTPs.


The study was designed to determine the differences between school board presidents and high school principals in Pennsylvania with regard to opinions concerning academic eligibility requirements. A researcher-designed questionnaire was utilized to collect the data. Likert scale items addressed such issues as the appropriateness and effectiveness of such standards, the beneficial nature of extracurricular activities, potential adverse effects of requirements, equity of standards, qualifications of administrators, and the criteria for establishing requirements. Respondents were also asked to assess the current requirement of the Pennsylvania Interscholastic Athletic Association (P.I.A.A.), as well as their own district requirement if such standard varied. Participants were also asked to indicate which criteria should be incorporated, and the organizational level at which standards should be based.

Open-ended items addressed the issues of the impact of block scheduling and home-schooled student programs upon extracurricular activities and academic eligibility requirements. Demographic variables of gender, age, and years experience were also included and assessed. Results of this study were based upon a return rate of 84.4% of the 269 high school principals and 60.7% of the 369 school board presidents, all randomly selected in a geographically stratified manner from P.I.A.A. member school districts. The primary test utilized was the Mann-Whitney “U” test, used to determine whether significant differences between the two groups existed. The results of the Mann-Whitney “U” tests of the Likert scale items indicated that a significant difference existed between the groups in 12 of the 19 items. Results also indicated differences between the groups with regard to appropriateness of standards, choice of criteria and appropriate organizational level. Responses to the open-ended items were coded and differences between the two groups were established. The impact of demographic variables was not considered to have a significant impact with regard to most of the issues. Recommendations were made to maintain the current standard employed by the P.I.A.A., (passing four subjects or the equivalent), the establishment of a specific academic eligibility requirement for districts that have adopted an intensive/block scheduling model, as well as exploration of the many issues concerning home-schooled student participation.

PSYCHOLOGY

AGGRESSION

Drake, Brent M. Is winning the only thing: Goal orientations and team norms predictions of legitimacy ratings of intentionally injurious sport acts, 1997. M.S., Purdue University (Melissa A. Chase). (102pp $8.00) PSY 1992

Athletic aggression is a troubling issue in youth sports (Bredemeier, Weiss, Shields & Cooper, 1987). Individual goal orientations have been found to be related to legitimacy ratings of intentionally injurious acts (Duda, Olson & Templin, 1991). Also, youth athletes’ perceptions of their teammates aggressive norms and their coaches’ goal orientations have been found to predict the adolescents’ stated willingness to aggress against an opponent (Stephens & Bredemeier, 1996). However, there has been a paucity of research into the relationship between a youth athletes’ perceptions of their parents’ goal orientations and their legitimacy ratings of intentionally injurious acts. Thus, the purpose of this research was to examine the relationships among youth athletes’ individual, perceptions of their coaches’, and perceptions of their parents’ goal orientations, and to examine the predictors of youth athletes’ team norms of aggression and legitimacy ratings.
of intentionally injurious acts. It was found that individual ego orientation, coach ego orientation, parent task orientation, parent ego orientation, and the interaction of parent task and ego orientation all predicted aggressive. Additionally, individual ego orientation and coach ego orientation were found to predict the total number of intentionally injurious acts deemed legitimate. Finally, coaches’ and parents’ goal orientations were found to be better predictors of aggressive team norms than individual goal orientation, but individual goal orientation was found to be a better predictor of the total number of intentionally injurious acts deemed legitimate.

**ANXIETY**


This study compared psychological state, resting heart rate (RHR), and resting blood pressure (BP) of 94 sedentary adults, aged 23 to 49 years. All were randomly assigned into 1 of 5 groups: stationary bicycle (B=19); cross country ski simulator (XC=22); motorized treadmill (T=21); hydraulic stepper (S=15); or control (C=17). Psychological profiles were completed pre- and posttraining with the State Trait Anxiety Inventory (STAI), the General Well-Being Schedule (GWB), and the Profile of Mood States (POMS). RHR and BP were measured pre- and posttraining under resting conditions. The 4 experimental groups trained 3 days per week for 12 weeks at 65-90% max HR. STAI scores improved significantly (p<.05) for exercising groups overall except T. The GWB total score, Energy Level score, Cheerful Mood score, and Relaxed vs Tense score for exercising groups overall improved significantly (p<.05). The XC group overall had a significant (p<.05) improvement in Satisfying Life score. The T and B groups overall had significant (p<.05) improvements in Emotional Control score. The POMS total score for exercising groups overall improved significantly (p<.05). The systolic BP did not significantly (p>.05) change pre- to posttest for any group overall. Diastolic BP decreased significantly (p<.05) for the S and C groups overall.

**ATTITUDES AND VALUES**


This study explored student-athlete perceptions of the National Collegiate Athletic Association (NCAA). These perceptions were identified through a sample of student athletes at a division I NCAA member institution. A sample consisted of 70 student athletes who participated in the study by filling out a questionnaire regarding, their knowledge, and beliefs about the NCAA. The evolution of the NCAA has been influenced by outside forces such as; the media, corporate sponsorship, and individuals who have not always held the best interest of the student-athlete. Today, there is very little attention to student-athlete perceptions because they don’t have a say in the rules and regulations created for them and mandated by the NCAA. The purpose of this study was to identify student-athlete attitudes and how their beliefs are influenced. Results show, student-athletes with greater knowledge of the NCAA had a negative attitude towards the NCAA while, those with less knowledge had a positive attitude towards the NCAA. Negative perceptions came from 1) student-athletes having a bad experience in programs governed by the NCAA; 2) financial hardships with athletic-scholarships and; 3) a fundamental belief that the NCAA is crooked. Student-athletes that had positive beliefs felt their experiences as governed by the NCAA were good. The positive attitude group believed the NCAA rules and regulations were fair and impartial which benefited student-athletes and college sports. Implications for perceptions of student-athletes are necessary to bridge the gap between student-athlete involvement out of the playing arena and into the policy making arena of the NCAA.

Peng, Hsiao-hwei *Comparison of preferred coaching leadership behaviors of basketball players at the NCAA Division III level*, 1997. M.S., University of Wisconsin-LaCrosse (Jane C. Meyer). (81pp 1f $4.00) PSY 2001

Female and male basketball players’ preferences for specific coaching behaviors were measured by the Modification and Revision of the Leadership Scale for Sport. Ss (M=88, F=96) were selected from the Wisconsin State University Conference (WSUC) and the Wisconsin Women’s Intercollegiate Athletic Conference (WWIAC), which compete at the NCAA Division III level. Of the 240 surveys sent, 184 were returned (77% response rate). A two way ANOVA with repeated measures showed there was a significant difference between the preferences of male and female basketball players for specific coaching behaviors (p<.001). Of the six subscales tested, Scheffé post hoc comparisons indicated there were significant differences between the preferences of male and female players in Democratic Behavior (p<.05) and Situational Consideration Behavior subscales (p<.05), but not in Training and Instruction Behavior, Autocratic Behavior, Social Support Behavior, and Positive Feedback Behavior subscales. It is suggested that the gender composition of a team be
considered as a situational factor which may affect the preference of subjects for specific coaching behaviors. Thus, it is recommended that coaches in the WSUC and the WWIAC provide more democratic behavior in the decision making process and consider more situational factors to enhance the performance and satisfaction of female athletes.

Rudd, Andrew Morals callousness as evidenced by trash talking tee shirts, 1996. M.S., University of Idaho (Sharon K. Stoll). (112pp 2f $8.00) PSY 1994

The purpose of this study was to: (a) philosophically describe and (b) empirically analyze the presence of moral callousness among high school students nationally, as supported by trash talking tee shirts. Currently, the governing body for high school athletics, called the National Federation for State High School Associations, is trying to curtail trash talking and other forms of unsportsmanlike conduct. However, no improvement in sportsmanlike behavior has occurred thus far. The reason for this lack of adherence to sportsmanship may be the result of moral callouses acquired from the social environment and poor role models. The present study surveyed moral callousness and moral reasoning at a large urban school, two middle sized small city schools, and a small rural school. Approximately 766 students were evaluated with the Hahm-Beller Values Choice Inventory and the Trash Talking Tee Shirt Questionnaire. Differences were examined by High School (41, 42, 43, 44), gender (male and female) status (non-athlete, individual sport athlete, and team sport athlete), and grade (10th, 11th, and 12th). After reviewing the results, males were ten times as many trash talking tee shirts (28.8%) as females (13.3%), (Chi2=16.95, p<.001). Males moral reasoning scores were significantly lower (M=62.04, SEM=1.00) than females (M=70.8, SEM=1.00), F (1,704) =46.3, p<.05. Team sport athletes wear twice as many (24.9%) as individual athletes (12.8%) and non athletes (13.7%), (Chi2 = 12.32, p<.005). Team sport athletes’ moral reasoning scores were significantly lower (63.49, SEM=78) than non athletes (68.48, SEM=1.24), F (2,704) =6.35, p<.05. Group 43 had the highest incidence of trash talking tee shirts (35.0%) compared to group 41 (17.89%), group 42 (19.74%) and group 44 (16.92%), (Chi2=8.60, p<.025). Group 43 had a significantly higher moral reasoning score (M=71.02, SEM=2.58), than group 41 (M=62.43, SEM=1.00), F (3,704) =5.12, p<.05. Group 42 had significantly higher moral reasoning scores (M=66.85, SEM=1.00) than Group 41 (M=62.43, SEM=1.00), F (3,704) =5.12, p<.05. Significant moral reasoning scores on the Hahm-Beller Values Choice Inventory were consistent with previous studies using the Hahm-Beller Values Choice Inventory. This was the first time the Trash Talking Tee Shirt Questionnaire had been administered. Results from the current study may suggest that high school athletes are morally callous.

BEHAVIOR ANALYSIS


This was a preliminary investigation to determine the prevalence of eating disorder symptomatology in a male, athletic population. Fifty-five, athletes from the University of North Carolina at Chapel Hill participated in this study. The Eating Disorder Inventory19 (EDI), was used to assess symptomatology relevant to eating disorders. Athletes scores were evaluated by using normative data for controls and eating disorder patients. Athletes EDI scores were below EDI scores of eating disorder patients. A One-way ANOVA showed no significant differences between mean subscale scores by team on the EDI. Male athletes did not exhibit symptomatology for eating disorders when compared to controls and eating disorder patients. Also, symptomatology for eating disorders among the athletes did not differ significantly by sport.


This study compared the effects of two Rational-Emotive Theory (RET) treatments in decreasing irrational thinking among behaviorally disordered adolescents. Participants included 72 adolescent patients at a private treatment center for boys. A three-group experimental design consisting of a control group and two treatment groups was used. Participants in the control group (CG) played in a regularly scheduled sports program and participated in service projects. Treatment 1 received a Rational-Emotive Education (REE) program where participants listened to lectures, filled out worksheets, and participated in class activities and discussions. Treatment 2 received a Rational-Emotive Challenge and Recreation (RECR) program where participants climbed an artificial rock wall, participated in low-level initiatives, and played modified games such as baseball, basketball, dodge ball, and follow the leader. Results indicated that both treatment groups scored significantly higher (p<.05) than the control group on a modified Attitudes and Beliefs Scale II (DiGiuseppe, Leaf, Robin, & Exner, 1988). McLane, Caren Lora The relationship between morningness/eveningness and exercise habits, 1996. M.S., Brigham Young University (Gordon B. Lindsay). (79pp 1f $4.00) PSY 1993

A two-part questionnaire was mailed to 188 students living in Deseret Towers, a Brigham Young University on-campus residence hall for single students. The question-
naiire determined a subject’s morningness/eveningness orientation and number of minutes spent exercising during a given week. There was no significant relationship between morningness/eveningness orientation and exercise habits (at a=0.05); however, there was a slight indication that evening-oriented persons are more likely to exercise than their morning-oriented counterparts. Further research needs to be conducted to confirm the results of this study, especially in a non-college environment.

Tantillo, Mary Effects of acute exercise on children with attention deficit-hyperactivity disorder, 1996. M.A., University of Georgia (Rodney K. Dishman). (106pp 2f $8.00) PSY 2005

Approximately 3-5% of school-age children have Attention Deficit-Hyperactivity Disorder (ADHD) (Shaywitz, et al., 1991; American Phychiatric Association, 1994). This disorder is characterized by inattention and/or hyperactivity-impulsivity (American Psychiatric Association, 1994) (see Appendix K). Children with ADHD frequently (75%) have disciplinary problems in school (Stewart, Pitts, Craig, & Dierufn 1966; Satterfield, Cantwell, Lesser, & Podosin, 1972), and 30%-40% of total referrals to child guidance clinics are children with ADHD (Barkley, 1982). ... Behavioral observations of motor impersistence in children and adults with focal lesions (Kertesz, et al., 1985) provide support that ADHD may be associated with a right hemispheric and frontal lobe dysfunction. Motor impersistence is the inability to sustain simple motor acts such as maintain a conjugate gaze, keep the mouth open, protrude the tongue, fix the eyes centrally, hold the eyelids shut, turn away, hold breath, or exert a steady pressure during a hand grip (Fisher, 1956). Children with ADHD are more likely than controls to have motor impersistence (Voella & Heilman, 1988). The underlying neuroanatomical structures and neurophysiological mechanisms responsible for ADHD remain unknown. However, similar characteristics have been noted between the behavior of children with ADHD and that of animals and adults with frontal lobe lesions (Mettes, 1980). Research indicates that children with ADHD exhibit hypoperfusion to the caudate-striatal region which is largely a dopaminergic system. "Children with pure ADHD evidence significant hypoperfusion in the right striatum whereas those with co-occurring neurologic disorders showed bilateral hypoperfusion the caudate-striatal region.” (Hynd, et al., 1993). ... Thus, it seems that the caudate striatal region of the brain in children with ADHD is dysfunctional in some way, dopaminergic pathways appear smaller possibly leading to decreased levels of dopamine. Studies with laboratory animals indicate that acute and chronic exercise increases brain dopamine activity. ... Thus, it is possible that children diagnosed with ADHD will experience increased dopamine levels incaudate-striatal region with exercise. It is also possible that exercise will attenuate some of the characteristics of ADHD. The Acoustic Startle Eyeblink Response (ASER) offers a non-invasive measure of sensorimotor activation as a function of exercise. ... Spontaneous eyeblinks have also been associated with dopaminergic pathways. Primate studies reveal that central nervous system dopamine agonists such as apomorphine and bromocryptine cause acute and chronic increases in blink rate (Karson, 1983; Casey, Gerlach, & Christenson, 1980). Conversely, the administration of antipsychotics reduced blink rate in medication-free patients with schizophrenia which is a disorder hypothesized to be associated with dopamine hyperactivity (Karson, 1983; Stevens, 1978; Cancro & Van Gelder, 1982; Helms & Godwin, 1985; Tecce, Savignano Bowman, & Cole, 1978). Since exercise has been associated with increasing levels of dopamine in the brain, it is hypothesized that acute bouts of maximal or submaximal exercise will lead to increased amplitude and decreased latency of the ASER (see Appendix B), increased spontaneous eyeblink rate, and decreased motor impersistence in children with ADHD compared to controls.


An interpretive investigation was conducted to gain an in-depth understanding of (1) coach perceptions of psychological characteristics and behaviors of male and female athletes and (2) how these perceptions impact coach behavior. The participants were fourteen collegiate head cross country coaches (1 female, 13 male) who were identified by their peers as having knowledge and experience in coaching males and females. They have been coaching an average of 23.2 years (range=8-29) and have coached both females and males an average of 15.7 years (range=3-28). A semi-structured interview format was used to achieve the investigative purposes. More specifically, the interview consisted of three parts. In the first part, coaches were asked to identify and describe characteristics and behaviors of their male and female athletes. Content analyses were conducted on the identified raw data themes to aid in describing and interpreting coaches’ perceptions of their female and male athletes. The following themes emerged as characteristic of female athletes: emotional/sensitive; need from coach; coachable; feel expectations/comfort; want to please; competitive with teammates; weight conscious/eating disorders; academically conscious; and; additional attributes conducive to athletic success. Themes emerging as characteristic of male athletes included the following: know it all attitude/challenge coach; tend to get off track; ego-involved/struggle with not winning; team emphasis; less emotional than female; hide feelings and; additional attributes conducive to athletic success. In the second part of the interview, specific situations were
related to the coaches who were asked to describe how they would behave or react in the situation when it involved a male and a female athlete. Content analyses were conducted on responses to each situation to help describe and interpret how and why coaches interact differently with female and male athletes. Behavioral differences identified by coaches included the tendency to take a more blunt, confrontive approach toward males and a more sensitive, cautious approach toward females. Additionally, there was a tendency to emphasize winning with males and doing one’s best with females. In the last part of the interview, variables identified in the review of literature as evidencing gender differences were described to the coaches. They were asked to describe any gender related differences they perceive on each of these variables. Separate content analyses were conducted on coaches’ responses to describe and interpret coaches’ perceptions and to verify or disconfirm findings derived from the review of literature. In addition to the description and interpretation of the results from each of the three parts of the interview, pervasive findings that emerged throughout coaches’ responses were discussed.


This study sought to further examine the relationship between psychological variables and baseball performance. Past research within baseball by Friend and LeUnes (1990) and Whalen (1995) has found a relationship between precompetitive affect and baseball performance in collegiate baseball samples. This study sought to further this research by examining the relationship between multiple psychological variables and baseball performance across a wider range of ages and performance levels. Specifically, the relationship between fear of failure, self-confidence, precompetitive affect, and batter’s run average within the sport of baseball was examined. Subjects, 53 males playing at four different competitive levels, were asked to complete questionnaires covering a four-six game range. Results indicated that fear of failure, self-confidence, and precompetitive affect did not significantly predict batter’s run average during the testing period.

MOTOR LEARNING AND CONTROL

Chong, Kwong Y. R. (Ready), set, go! The flexible adaptation of automatic responses to changing task conditions: impairment as a result of Parkinson’s Disease, 1997. Ph.D., University of Oregon (Marjorie H. Woollacott, Fay B. Horak). (194pp 2f $8.00) PSY 1976

Previous work has shown that individuals with Parkinson’s disease affecting the basal ganglia have difficulty in adapting the amplitude of ankle muscle responses to changes in balance conditions. The purpose of this investigation was to test the hypothesis that this inflexibility is the result of a deficit in the ability to quickly change from one behavioral set to another compared to healthy young, healthy older adults, and individuals with dementia of the Alzheimer type (AD). The ability to change set quickly was inferred by comparing ankle muscle responses when balance conditions were changed from one context to another. Balance conditions were specifically chosen to influence different kinds of set: (1) Postural set-responses to backward translations or toes up rotations of the support surface under free stance versus holding onto a stable frame; responses to surface translations when standing versus when sitting; rapid rise-to-toes action during free stance versus holding onto a stable frame; (2) Sensorimotor set-responses to backward translations versus toes up rotations; and (3) Cognitive set-responses to backward translations or toes up rotations under “resist” versus “give” instructions. The results showed that healthy young, healthy older and AD subjects, but not Parkinsonian subjects OFF and ON, were able to change set rapidly within one trial by activating or suppressing muscle responses when balance conditions were changed. Parkinsonian subjects changed set more slowly, and therefore either needed several trials, or showed a smaller margin of change in response amplitude. Taken as a whole, these results strongly suggest that the basal ganglia, which are affected in Parkinson’s disease, are critical neural substrates in the ability to change set quickly. The inability to change set quickly was task independent. This dissertation includes my previously published and my co-authored materials.


This study was designed to determine if verbal cues could improve sport climbing performance. The sample included 42 male and female Ss (18-27 yr.). Subjects self assigned themselves into one of 2, 8-week, indoor sport climbing courses offered at the University of Wisconsin-La Crosse. Classes were randomly selected as either a control (n=22) or treatment group (n=20) via a coin toss. Subjects completed a pre- and posttest which measured their climbing performance. Treatment subjects participated in 12 training sessions in which they received climbing instruction and were presented with two performance cues after each trial. Subjects in the control group received climbing instruction but did not receive performance cues after each climb. Initial t-test results indicated a significant difference (p<.05) between pretest climbing performances within males and females. Results of a 2-way ANCOVA indicated no
significant (p>.05) interaction between the pre- and posttest results by group, by gender, or the interaction between the two. Pearson product-moment correlations indicated no significant (p>.05) correlations between the variables of age, height, weight, and gain performance score.

Roncesvalles, Maria N. The development of balance control mechanisms in infants and young children, 1997. Ph.D., University of Oregon (Jody L. Jensen). (129pp 2f $8.00) PSY 1984

The development of locomotor and manipulative skills is first dependent upon the mastery of static and dynamic postures. This research documents the development of balance control skills, specifically as they relate to preservation of an upright bipedal posture. Two balance recovery strategies are of particular interest. The first behavior regains balance by repositioning the center of mass above the base of support without changing foot placement. The second behavior reestablishes control and a new base of support by stepping. In the first study, 61 children, 9 months to 10 years of age, were grouped according to locomotor ability. The groups included standers, new, intermediate and advanced walkers, runners and jumpers, hoppers, gallopers, and skippers. To test their balance, the children experienced support surface perturbations of varying severity. Analyses of conditions managed, without subjects collapsing or taking a step, revealed an increasing ability to withstand more severe perturbations with increasing developmental age. Hoppers, gallopers, and skippers had faster recovery times, more efficient movement trajectories, greater muscle torque magnitudes and more refined torque patterns for transient perturbations compared to the lesser experienced groups. Multi-modal muscle torque patterns gave way to uni-modal patterns characterized by higher magnitudes and synchronous timing of peak muscle torques at each of the lower extremity joints. Results show a clear association between muscle torque regulatory abilities and improvement in balance. The second experiment tested the emergence of stepping as a functional response for balance control. Twenty-five children, aged 9 to 19 months, with 0 to 6 months walking experience were exposed to support surface perturbations. Despite their ability to execute voluntary stepping, novice walkers (<3 months walking experience) were unable to step automatically when perturbed. Advanced walkers (<3 months walking experience) captured balance without moving their feet when exposed to small threats to balance, and employed the stepping response when the perturbation size increased. Three months of walking experience appears to be the threshold for transforming voluntary stepping into an automatic balance recovery response. The practice of locomotor patterns and fine-tuning of torque modulation skills transform these coping behaviors into reliable and efficient strategies for balance control.

Skaggs, Steve O. Effects of seat and back rest inclination on wheelchair propulsion of individuals with spastic cerebral palsy, 1995. Ph.D., Oregon State University (Jeffrey McCubbin). (173pp 2f $8.00) PSY 1999

The purpose of this study was to determine the effects of back and seat rest inclination on the kinematics of manual hand-rim wheelchair propulsion in subjects with spastic type cerebral palsy. Subjects ranged in age from nine to twenty-one and were classified as USCPAA Class 111 or IV functional ability. Subjects were required to propel a standardized wheelchair at six seat positions from combinations of back rest angles of 0, 3 and -5 degrees from vertical and thigh angles of 0 and 5 degrees from horizontal. Combinations of thigh/seat rest angles were 0/-5, 5/-5, 5/0, 5/3, 0/3, 0/0 constituting the six different conditions. Subjects were filmed while wheeling in each seat position. Wheeling was performed at two and three kilometers per hour on a low friction roller system. It was hypothesized that since individuals with spastic type cerebral palsy have improved functional upper extremity performance as the body center of mass is positioned over the ischial tuberocities and hip flexion angle is maintained at 90 degrees (0/0), that similar results would be found in wheelchair propulsion. Based on the results of kinematic data analyzed in this study there was no indication that the 0/0 seat position was superior for subjects with cerebral palsy under the conditions of this study. Larger elbow flexion/extension range of motion (p=.06) exhibited by the 5/3 and 5/0 seat orientations suggests that these positions provide a more effective wheelchair propulsion orientation for subjects in this study.

PERCEPTION

Vienneau, Opal Yvette The role of visual sampling in obstacle compensation, 1997. M.S., University of British Columbia (Dave Sanderson). (76pp 1f $4.00) PSY 1977

Most obstacle avoidance studies have identified the importance of visual information in choosing obstacle avoidance strategies and of kinesthetic information for successful clearance of obstacles. The intent of this investigation was to determine on what and how visual information is utilized when an obstacle is encountered in our travel path and on some of the subsequent gait adaptations made to accommodate it. Accommodation strategies are based on movement goals and, in the case of this experiment, the goal was to step up onto a platform of set height and width but placed at varying distances from the subject’s start position. Twelve volunteers completed seven walking trials for each of four obstacle placement conditions. The kinematic properties of their gait and the corresponding eye movements were recorded and analyzed to determine whether there was an inherent pattern
in accommodating obstacles. Subjects were found to slow down in mid path and make changes to their stride length. Smaller adjustments were applied within the last two strides before the obstacle. Stride length change was the primary method of adaptation. Subjects focused primarily on the obstacle throughout the trials, however gaze time on the obstacle decreased as the subjects approached the point of step-up. The normal condition, set at a natural right-foot step-up position, presented the least change in stride and exhibited patterns similar to those observed in the control situation where there was no obstacle. The greatest effect of stride was observed for the close obstacle placement, while for the far obstacle placement participants displayed similar patterns that were less pronounced. The results of the present experiment indicated that multiple visual sampling was necessary in all strides to apply adaptations to gait.

**PERSONALITY**


This study investigated differences in six sport specific personal characteristics as a function of skill level. The characteristics included competitive trait anxiety, trait self-confidence, concentration, mental preparation skills, achievement motivation, and leadership. A self evaluation questionnaire was administered to students in beginning, intermediate, and advanced physical education activity classes at the State University of New York, College at Brockport. Analysis of variance (ANOVA) and multiple comparison test statistics were used to analyze differences for each of the six personal characteristics and a mental toughness composite score across the three groups of performers. The results revealed significant differences in achievement motivation in favor of advanced performers over beginners, and advanced performers over intermediate performers. Advanced performers also made better use of their mental preparation skills than beginners. In the area of concentration, intermediate performers posted significantly better scores than beginners. Significant differences among and between the three skill groups were not found for any of the other personal characteristics under investigation. The failure to find additional differences among the three groups of sport performers was explained by the fact that the questionnaires used to obtain the data were designed for the sport context, not a physical education environment.

This study investigated changes in five personality traits and the use of mental preparation skills by college athletes over the course of a sport season. The traits measured included achievement motivation, competitive trait anxiety, concentration, leadership, and trait self-confidence. The mental preparation skills included imagery, stress management, goal-setting, psychic energy management, and attention. A self evaluation questionnaire was administered to Fall and Winter intercollegiate athletes at the State University of New York, College at Brockport.

The participating male athletic teams included soccer, football, basketball, ice hockey, cross-country, and wrestling. The participating female athletic teams included soccer, field hockey, gymnastics, volleyball, basketball, cross-country, and tennis. The purpose of the investigation was to determine if the personality traits and mental preparation skills of athletes change over the course of a sport season. It was found that five of the six personality traits and the mental preparation skills did not change. Competitive trait anxiety was the only variable that significantly changed from pre- to post-season.


An inventory for testing the psychological skills of Chinese Athletes was developed based on a two-order structure of both Howe’s (1993), and Hardy and Jones’ (1994) conceptualizations. This project consisted of two phases. In Study I the original version of the 47-item Psychological Skills Inventory for Chinese Athletes (PSICA) was administered to 305 subjects ranging from college level to international level athletes. The PSICA contains five sport specific subscales: Anxiety Control, Concentration, Confidence, Mental Preparation, and Motivation. A confirmatory factor analysis (CFA) revealed some problems with the original 47-item PSICA, but a modified 23-item scale demonstrated a good factorial validity. In Study II the revised 23-item PSICA was administered to 713 subjects ranging from college level to international level athletes. Cross validation test revealed some problems with the model, and / or the inventory. The overall fit indices, with exception of the RMSEA for the female subsample, when analyzed using weighted least square (WLS) procedure, indicated an adequate but not good fit of the five-factor model. Convergent and discriminant validity test, and the test-retest reliability results indicated that the PSICA is psychometrically strong in these aspects. The findings suggest that the PSICA has potential as a valid psychological scale.

Drake, Benjamin C. *Effects of an intercollegiate sport season on selected personality traits and mental preparation skills*, 1997. M.S.Ed., SUNY College at Brockport (Daniel E. Smith). (40pp 1f $4.00) PSY 1983
SELF-CONCEPT

Adams, Mark J. The perception of high school athletes and coaches in regard to individual and team efficacy in basketball, 1996. M.S., University of North Carolina-Greensboro (Daniel Gould). (140pp 2f $8.00) PSY 1982

Bandura’s (1977, 1986) theory of efficacy expectations served as the theoretical framework for this exploratory study. Research has shown efficacy levels to be influential in affecting performance levels of both individuals and teams, and the intent of this investigation was to explore how coaches and players perceived certain aspects of efficacy expectations. The first and primary purpose was to examine coaches’ and athletes’ perceptions of efficacy sources and efficacy enhancing coaching strategies. The secondary purpose was to explore the relationship between individual and team efficacy expectations from the perspective of both coaches and athletes. Specifically, Indiana high school basketball players and coaches were surveyed regarding their perception of the importance of 32 potential sources of self- and team efficacy. Also, coaches and players evaluated the effectiveness and frequency of use of 14 efficacy enhancing coaching strategies. Lastly, ratings of individual and team efficacy from the participants were compared in order to more closely investigate the relationship between individual and team efficacy. A major precept of this study was the comparison of the perspectives of coaches and players. Rank correlations showed that coaches and players were very similar in their evaluation of the efficacy sources and strategies ($r = .72$ to $.87$). The majority of the sources and strategies were rated as at least moderately important and at least moderately effective, respectively. Top-rated sources included player’s/team’s level of effort in games and practice, mental state of the player/team, amount of encouragement from the coach, performance of the game and practice, and confidence in the coach. Top-rated coaching strategies were creating “game-like” pressure situations in practice, acting confident oneself, encouraging positive talk, use of instruction and drilling, employing hard physical conditioning. The comparison of the actual ratings of individual and team efficacy showed that team efficacy was moderately related to individual efficacy ($r = .48$), and coaches were consistently lower than players in their ratings of individual and team efficacy. These findings are discussed in relation to previous research and future practical and empirical implications.

Briner, Megan A. A comparison of perceived health and quality of life between cardiac rehabilitation participants and nonparticipants, 1996. M.S., Brigham Young University (Steven A. Aldana). (67pp 1f $4.00) PSY 1979

This study compared perceived health and quality of life between coronary artery bypass patients who participated in the Utah Valley Regional Medical Center (UVRMC) cardiac rehabilitation program with those who did not. Ninety-four patients between the ages of 39 and 84 participated in the study. Each patient completed the SF-36 Questionnaire about health and quality of life, both before and after 444 days after discharge from the hospital. Fifty-five of the 94 patients who participated in the study attended the cardiac rehabilitation program at WRMC, consisting of 23 sessions or 4 weeks of monitored exercise and education concerning heart disease. There was no difference in reasons for attending or not attending the cardiac rehabilitation program, in terms of physical, social, or emotional ability, between the two groups. The results show that the nonparticipants had a significantly ($p<0.05$) lower average SF-36 pre score. However, there was no significant difference between participants and nonparticipants in relation to age or time between surgery and completion of the post surgery SF-36 Questionnaire. After adjusting for age, time between surgery and completion of the post surgery SF-36 Questionnaire, and pre surgery SF-36 scores, the cardiac rehabilitation participants still had a significantly higher ($p<0.001$) SF-36 post score indicating they have a higher quality of life.


Ratings of perceived exertion (RPE) obtained from nine subjects (2 males and 7 females, aged 18-30 yr) performing 21 min of continuous StairMaster™ and treadmill™ exercise at approximately 60% VO$_{2}$max on each mode, were compared. Before testing, subjects were extensively trained on each mode and familiarized with testing procedures. During the SM and TM continuous exercise bouts, heart rate (HR) and RPE were measured every 3 min. Results from 2 x 7 repeated measures MANCOVA tests indicated that SM exercise elicited significantly higher HR and RPE compared to TM exercise. HR and RPE across time did not differ. A mode by time interaction effect was only apparent for the TM 6-min RPE. The Pearson correlation coefficient for the SM HR-RPE relationship was higher than the Pearson correlation coefficient for the TM HR-RPE relationship ($r = .78$ vs $r = .46$). The results of this study suggest that, moderate-intensity SM exercise at the same relative intensity was physiologically (HR) and perceptually (RPE) harder than moderate-intensity TM exercise. The categorical RPE scale was found to be reliable for SM exercise.


The purpose of this study was to investigate the role of various factors in athletes’ cognitive appraisal of injury. Specifically, the influence of personal factors on athletes’
cognitive appraisal of injury was identified through subjects’ responses regarding the consequences of sustaining an injury. Respondents included 27 (16 male and 11 female) Varsity and Club sport participants from three NCAA Division I Institutions in the United States. Data was gathered via three questionnaires including a General Information Sheet (GIS), Injury Appraisal Questionnaire (IAQ), and a follow-up questionnaire (supplemental to the present investigation). Two regression models consisting of athlete self report and sport medicine staff reports regarding injury were examined in order to determine predictive utility of those factors on athletes’ cognitive appraisal of injury and objective injury severity. Both models yielded significant predictors and are each discussed in terms of the current knowledge base surrounding perceptions of athletic injury.

Rowe, David A. Development and validation of a questionnaire to measure body image, 1996. Ph.D., University of Georgia (Ted A Baumgartner, Jeri Benson). (253pp 3f $12.00) PSY 2003

The purpose of this study was to develop and validate a new questionnaire to measure body image in young adults. The nature of the body image construct was also investigated. Data were collected in three pilot stages and a final stage of the study. Responses to open-ended questions administered in the first pilot stage were used to develop statement items for the new questionnaire. In the second and third pilot stages, exploratory factor analyses and item-subscale correlations were used to guide revisions to the questionnaire. The final stage involved the collection of evidence to support the construct validity of the questionnaire. Observations from 1024 undergraduate students were randomly divided into two subsamples. Confirmatory factor analyses were used with the calibration subsample to modify the measurement model underlying the questionnaire. The final result was a nine factor model with acceptable fit in the calibration subsample (Chi^2 = 1872.98; p < .001; Chi^2/df = 2.79; MOC = .31; TLI = .89; SRMR = .07). This model was cross validated successfully in the validation subsample, by imposing the parameter values from the calibration subsample on the validation subsample data (Chi^2 = 2365.82; p < .001; Chi^2/df = 3.03; MOC = .21; TLI = .88; RMSR = .08). Discriminant evidence of construct validity was obtained by comparing the females in the final sample, to a sample of eating disordered students, and a sample of student dance performers. Mean scores of the eating disordered students indicated that they evaluated their overall appearance, health/fitness level, and fatness more negatively, and expressed more negative feelings about their bodies, which reproduced similar research findings from the literature. The student dance performers’ mean scores indicated they evaluated their overall appearance, fatness level, and health/fitness level more positively, and expressed less negative feelings about their bodies, which was also similar to research findings from the literature. The findings in the eating disordered students and the student dance performers thus provided external evidence that the questionnaire was a valid measure of body image construct. Index Words: Body image, validity, measurement, factor analysis, psychometrics, questionnaire development.


The purpose of this study was to test a new method for obtaining ratings of perceived exertion (RPE) during treadmill exercise. The new method utilized an analog dial fixed to a potentiometer on which a range of 0 to 80 ohms could be elicited. Subjects for this investigation consisted of 26 members of the University of Wisconsin-La Crosse baseball team. The Ss were randomly split into two groups. The first group (n = 13) utilized the Borg scale, and the second (n = 13) the analog dial. Each S participated in a Bruce protocol maximal graded exercise test. At 30 sec intervals, RPE, HR, and VO2 were obtained. A correlational analysis was then performed between the variables for both the analog dial group and the Borg scale group. The results showed a significant (p < .05) relationship between RPE and HR (p = .92), RPE and VO2 (p = .93), and HR and VO2 (p = .89) for the analog dial group. Likewise, for the Borg scale group, results showed a significant (p < .05) relationship between RPE and HR (p = .85), RPE and VO2 (p = .91), and HR and VO2 (p = .92). F tests (26,26 = 2.58: alpha = 0.02) revealed no significant differences between Borg scale and analog dial correlation coefficients. It was concluded that analog RPE correlates significantly with the physiological variables of HR and VO2, but not significantly better than Borg scale RPE. Also, the analog scale shows a curvilinear relationship with percent of the graded exercise test completed.

SOcial psychology

Ahlander, Julie D. Audience enjoyment of dance performance improvisation as affected by improvisational structures and audience education, 1996. M.A., Brigham Young University (Catherine H. Black). (74pp 1f $4.00) PSY 1973

The purpose of this project was to present a dance performance that included six improvisations, two without structure, two with structures that were easily accessible to the audience, and two with esoteric structures, to see
whether or not the element of structure had any effect on the audience’s enjoyment of the performance. A secondary purpose of the study was to see whether or not audience education had an effect on enjoyment. The art of performance, and specifically, the art of performance improvisation is elusive in its understanding. There are no set steps that will guarantee success for anyone. This project attempted to determine whether or not giving the improvisations specific structures and/or educating the audience helped create a positive performer-audience connection. What was found was that structure did positively affect audience enjoyment and education had a minor effect. It is believed that in addition to the use of structural elements and audience education a number of other performance elements, which were discovered during the rehearsal process, contributed to overall audience enjoyment. The additional performance elements included: 1) having skilled dancers who were open to improvisation, willing to take risks, and had significant performance experience; 2) having a skilled musician provide improvised accompaniment; 3) having performers who possessed the performance sense required in improvisation which allows for sensitivity to the integrity of a dance while still being able to share the dance with observers; and 4) having performers who understood and utilized some of the universal elements of structure.


The present exploratory study examined the relationship between participation in intercollegiate athletics and the dynamics of romantic relationships. A sample of college aged individuals from the student-athlete population at two different Division I southeastern universities completed a series of inventories addressing their demographic background in addition to the quality of their romantic relationships. Findings indicated that perceptions of support, conflict, and depth experienced in romantic relationships were greater in-season than out-of-season for both female and male student-athletes. Furthermore, a number of independent variables were assessed for their ability to predict the criterion variables support, conflict, and depth. Future research efforts need to explore in greater detail the intricacies surrounding student-athletes’ interpersonal relationships to gain a better understanding of the whole student-athlete.


A Likert scale questionnaire was completed by 98 first year student-athletes, 17 mentors and 16 coaches. The first section of the questionnaire consisted of thirteen general statements about Carolina ACT. The next section included seven statements, specifically targeted one of the subject groups. The data was analyzed using Microsoft Excel and Statistical Package for the Social Sciences (SPSS). Overall, the study indicated that first year student-athletes, mentors and head coaches were pleased with the goals and operation of Carolina ACT. One obvious conclusion from the study was that ACT mentors were the most knowledgeable of the goals and responsibilities of the program. All three groups agree that Carolina ACT was a valuable program to the University of North Carolina and should be continued for next years freshmen. The success of Carolina ACT allows freshmen student-athletes to be better equipped to handle the challenges and temptations that a university environment offers.

McGlade, Bernadette, V. The development and implementation of the Total Person Program at the Georgia Tech Athletic Association, 1997. M.A., University of North Carolina-Chapel Hill (Frederick Mueller). (82 pp 1 f $4.00) PSY 2002

In 1980, Dr. Homer Rice accepted the position of Assistant to the President and Director of Athletics at the Georgia Institute of Technology. He pledged to develop a support program for student athletes to enhance each student athlete’s opportunity for life long success. The Total Person Program is designed to focus balance on all areas of a students life involving academic and athletic excellence, spiritual and emotional development, career planning and placement, and social and personal success. The ultimate goal of The Total Person Program is to bridge the gap between a student athlete’s athletic career and the successful adjustment to life long professional and personal goals. His visionary program adopted by the National Collegiate Athletic Association and the Division IA Directors of Athletics Association has helped countless student athletes become winners both on and off the field.

Sankar, Dan The effects of group process and sport imagery on the sport experience of high school athletes, 1997. M.A., University of British Columbia (Marv Westwood). (95 pp 1 f $4.00) PSY 1995

As sport begins to gain momentum, partly due to the extreme value placed on professional athletics, the study and use of sport psychology has also gained strength. Much, if not all, of its focus has centered on optimizing individual athletic performance. Little, or no attention has been placed on fostering a sport unit whose basis is individual growth and learning. As we enter the new century, researchers and teachers alike must begin to align the education of sport toward the multitude of athletes, including adolescent ones, who will not find a home in
professional athletics, but who must take the skills learned in the sporting environment into other avenues of life. The purpose of the study is two fold: (1) to investigate the role of group development toward the effectiveness of an imagery training program; and (2) to investigate the impact of imagery toward enhancing sport experience. Qualitative methodology, specifically semi-structured interview analysis, was utilized in this study. Eight (8) high school sport leaders participated in a eight week sport imagery training program. The program was driven by a group counseling approach (Amundson, Westwood, Borgen, and Pollard, 1989), which has received support in non sport settings, but prior to this study had not been tested with athletes. The study found that the group process greatly impacted the learner and provided athletes a different perspective in which to view their sport experience.

Content analysis uncovered four categories: Group Characteristics, Learning Factors, Application Factors, and Program Limitations, under which sixteen themes were identified. Definitions and interview support are offered in the results chapter, and further discussion is presented in the chapter five. The findings of the study are discussed to provide the impetus for future research into the budding field of sport counseling. In addition, suggestions for current coaches and teachers are presented.


The study included 11 members of the Slippery Rock State College track and field team that participated at the 1979 Division III National Championship Track and Field Meet. Eight of the 11 members participated in the study. Factors affecting performance success were examined. Mean scores, standard deviations, and frequency distributions were used to analyze the data. The following conclusions appear warranted within the limitations of the study. Factors that contributed to winning a National Championship include coaches that are knowledgeable and care about each individual’s success, a cohesive group that works together toward a common goal, and individual athletes who have a specific goal and believe that their own effort leads to success.

Shoemaker, Mindy Effect of Hardiness training on math and science grades in economically and/or educationally disadvantaged junior high and high school students, 1997. M.S., Brigham Young University (Keith J. Karren). (40pp 1f $4.00) PSY 1997

This study examined the effect of hardiness training on math and science grades in economically and/or educationally disadvantaged junior high and high school students. The participants consisted of 15 students (11 female, 4 male) who were selected by their respective school counselors. They received hardiness training in 1 hour sessions, 4 days a week, for 4 weeks. The Hardy Survey was used to measure levels of hardiness, specifically control, commitment, and challenge coping personality characteristics. Paired t-tests with alpha at .05 revealed a positive relationship between hardiness training and grades.

STRESS


This study measured the effect of a 10-week stress management course on physical and psychological symptoms. Previous research indicates many symptoms improve with disease-specific stress management. This study examined whether a multifaceted stress management course may relieve symptoms regardless of the disorder. Twenty-eight consenting females were randomly assigned to Group A or B. Each completed the revised Memorial Symptom Assessment Scale (MSAS). Group A received the course. Both groups again completed the MSAS. Due to attrition, only 12 females finished the study. A one-way ANOVA indicated no statistically significant evidence of a difference between Groups A and B. Trends in the data indicate a slight possibility of improvement in Group A. A large scale replication is recommended.
PART II

KEYWORDS INDEX

for

VOLUME 11, NO. 1

This index includes keywords for titles published in microfiche format by Microform Publications in Volume 11, No. 1 (April 1998).

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 author’s name. 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 keywords appear in alphabetic order and are followed by the author names of the doctoral or master’s theses that they refer to. Because each thesis will have more than one keyword, author names appear several times under different keywords. The author names are followed by the research and statistical methods used in the study. These are contained in brackets—the letters before the dash refer to the research methods, those behind the dash denote the statistical methods. The methods information is followed by the subject code and number for the study. The following example illustrates the elements of each entry.

BIOMECHANICS

Allen, D.M. [D,MA-DE,MAV] PE 3815

Biomechanics is one of the keywords of a study by D. M. Allen. The research methods used in the study include descriptive and mechanical analysis techniques; statistics are descriptive and Multivariate Analysis of Variance. The study’s subject code is PE 3815. To find the title of the study as listed in part I of the Bulletin, use the author index on page 63 to find the page number on which the study by D. M. Allen 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 in the table on the following page.
### METHODS

<table>
<thead>
<tr>
<th>A</th>
<th>Anthropometry</th>
<th>E</th>
<th>Experimental</th>
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<td>Action Research</td>
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<td>DA</td>
<td>Documentary Analysis</td>
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### STATISTICS

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<th>Percent</th>
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<td>LSD</td>
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<td>Analysis of Variance (Friedman)</td>
<td>MAC</td>
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<td>Binomial</td>
<td>MAV</td>
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<td>BON</td>
<td>Bonferroni Method</td>
<td>MDA</td>
<td>Multivariate Discriminant Analysis</td>
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<td>CAN</td>
<td>Canonical Correlation</td>
<td>MMM</td>
<td>Multivariate Mixed Model</td>
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<td>Graphic</td>
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<td>Standard Error of the Estimate</td>
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