General Instructions (Please read carefully).

On the following pages you’ll see several abstracts, drawn from recent research in each of the sub-disciplines associated with Kinesiology and Recreation. Your task is simply to critique two of these according to the techniques and methods practiced this semester in KNR 497. There are some rules associated with this though. For further information, read on:

a) The two abstracts cannot both be from the same sub-discipline. The reason for this is that, although it is desirable to understand the content of an area before attempting a proper critique of its research, a lack of content knowledge should not preclude you from offering at least some relevant analysis of the quality of the research.

b) You should indicate your name and the date in the top left corner of your submission, and the pages of the submission should be stapled together. Emailed submissions will not be accepted.

c) You should clearly label your critique of each abstract by sub-discipline, and by abstract number within the sub-discipline, as they are labeled in this final (in other words follow my own labeling of the abstracts, so that I can easily see which abstract you are critiquing – see example below).

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Pete Smith
11/11/2010
Research Methods Mid-term Exam
Abstract Critique #1:
Exercise Physiology, Abstract #1: Anchoring Procedures in Reliability of Ratings of Perceived Exertion during Resistance Exercise.
  a. Study variables:
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d) Failure to adhere to all of the instructions above (and below, of course) will result in a maximum grade of a B on the midterm (sorry, but it makes it far easier for me to grade if things are presented in a uniform manner across individuals).

e) The answers should be your work and yours alone. Please do not plagiarize.

f) The deadline for submission of this midterm is two weeks from distribution: 10/25/2010, in class.

g) The questions (answer for each of your two chosen abstracts):
   a. What are the study variables (dependent and independent)?
   b. What is the relationship under investigation?
   c. What are the (expected) study outcomes, if any?
   d. What is the study design, in design notation?
   e. Critique the external validity of the study
f. Critique the construct validity of the study

g. Critique the internal validity of the study

For parts e-g, make sure you re-familiarize yourself with the rubric shared in class so that you understand how to get an “A”! [NB: where you don’t have enough evidence presented in the abstract to make a final determination of the strength of validity, it is entirely appropriate to phrase your comments as questions, provided you supply as much rationale as you can.]

And here are the abstracts...

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**Exercise Physiology**

1. **Anchoring Procedures in Reliability of Ratings of Perceived Exertion during Resistance Exercise.**

Although the validity of perceived exertion as a method of monitoring the intensity of resistance exercise has been established, little is known about the test-retest reliability of ratings of perceived exertion during resistance exercise. Specifically, it is unknown whether the use of different anchoring procedures influences the reliability of ratings of perceived exertion. 30 men were assigned to an Exercise, Memory, or combined Exercise and Memory anchoring group. Participants completed an assessment of maximal leg-extension strength and were introduced to the Borg 15-category rating of perceived exertion scale through anchoring procedures that varied across groups. During two sessions of resistance exercise, participants rated active muscle perceived exertion after performing one repetition of the leg-extension exercise at 40%, 50%, 60%, 70%, 80% and 90% of the one-repetition maximum. A three-factor (Group x Intensity x Session) analysis of variance was performed to examine the perceived exertion data. Perceived exertion increased significantly (p <.01) with increasing exercise intensity in all groups and in both sessions. Mean ratings did not differ significantly among groups. Reliability was assessed for each group. Intraclass correlation coefficients ranged from .07 to .80 and percent agreement ranged from 60% to 90%. The results indicate that the reliability of ratings of perceived exertion during resistance exercise is acceptable regardless of the type of anchoring procedures used.

2. **Physiologic Profile of the Fitness Status of Collegiate Cheerleaders.**

Cheerleading, traditionally considered a nonathletic activity, has evolved into a competitive sport requiring high levels of fitness. Despite the trend of cheerleaders performing increasingly difficult and athletic skills, very little is known about their fitness levels. The purpose of this study was to provide a
physiological profile of the fitness status of a squad of collegiate cheerleaders. Eighteen cheerleaders (11 men and 7 women) participated in this study. Each subject completed a Bruce protocol maximal treadmill test, underwater weighing, 1 repetition maximum bench press, sit-and-reach test, push-ups, curl-ups, and isokinetic strength testing. The mean and SD were calculated to provide the physical fitness profile for each parameter. A comparison to normative data demonstrated that cheerleaders have a high level of fitness and scores similar to other collegiate athletes.

3.

Comparison of Body Composition Techniques to Determine Body Fat in High School Wrestlers.

Rapid weight loss has been a dangerous behavior associated with the sport of wrestling. The objective of this study was to examine the effectiveness of five body composition assessment techniques at determining body fat percentages in high school wrestlers. Eighteen male wrestlers (mean +/- SD) [age: 16.2 +/- 1.4 years; height: 171.9 +/- 6.3 cm; mass: 74.1 +/- 20.3 kg, % body fat 14.0 +/- 6.7 %] participated in the study. All testing was completed during a single session with the wrestlers reporting to the laboratory having fasted and restricted fluid intake for four hours prior to testing. Height and weight were obtained followed by five different body composition assessment techniques: Underwater Weighing (UWW), Air Displacement Plethysmography (ADP), Bioelectrical Impedance (BIA), 3 site skinfold (3SK) and 6 site skinfold (6SK) analysis. No significant differences existed between the five testing methods (p = 0.297). Pearson correlations ranged from 0.989 to 0.805 (p is less than or equal to 0.05) between UWW, ADP, 3SK and 6SK analyses. These data suggest that % BF may be successfully estimated in high school wrestlers by using ADP, UWW, 3SK and 6SK analyses providing that the same testing procedure is used on the same athlete throughout the season.

Recreation / Sport Management

1.

Leisure Time Boredom: Issues Concerning College Students.

Students who do not have leisure skills, cannot manage leisure time, or are not aware that leisure can be psychologically rewarding are more likely to be bored during leisure. This study examined the impact of boredom on leisure of college students in relation to gender, level of education, and activity choice. Subjects at a Midwestern university completed the Leisure Boredom Scale and a modified version of the Leisure Activities Blank. No significant differences were found between overall levels of leisure boredom and the three independent variables. However, examinations of individual Leisure Boredom Scale items indicated specific differences. Examples of the findings included that males were more likely than females to agree that they became highly involved in what they did during their leisure and that they were very active during their leisure. Females were most likely to select passive activities as their activity
of choice. Students who chose passive leisure activities were less likely to agree that they were very active in their leisure than the other three activity groups. From these differences, implications were constructed for the development and maintenance of campus recreational programs.

2.

The Contribution of Constraint Negotiation to the Leisure Satisfaction of College Students in Campus Recreational Sports.

Satisfaction experienced during leisure activity plays an important role in continued leisure participation. Leisure participation is also affected by leisure constraints. In recent years, the idea of negotiating leisure constraints has emerged as an important area of research. The concept of constraint negotiation suggests that individuals use various methods to overcome constraints and participate in leisure activities. Although research has been done examining the leisure satisfaction of college students, as well as constraint negotiation strategies used by college students, little research has examined the role of negotiation in creating satisfying leisure experiences. The purpose of this study was to examine which type of constraint negotiation strategies contributed to satisfying leisure experiences for college students. The sample of this study consisted of college students at two midwestern universities (N = 363). Results from this study indicate that college students commonly use interpersonal relations, physical fitness, and skill acquisition negotiation strategies in order to participate in leisure activities. Additional results from multiple regression analyses suggest that the strongest predictors of leisure satisfaction are negotiation strategies that involve a social component, the practicing of a skill in order to improve, and a sense of accomplishment during participation. The findings of this study indicate that leisure satisfaction for college students may be associated with the negotiation strategies used to participate in leisure activities.

3.

An Analysis of the Perceived Competencies of Recreational Sport Administrators.

This study sought to determine the core competencies necessary for the administration of sport programs in campus, public, and military recreation settings using the Competencies of Sport Managers instrument. Factor analysis of 457 responses on 96 items revealed that the competencies of sport administrators were represented by four factors, identified as Management Techniques, Sport Programming, Business Administration, and Theoretical Perspectives. Discriminant analysis revealed that sport administrators in campus recreation settings placed more emphasis on Theoretical Perspectives and less emphasis on Sport Programming. When compared to sport management faculty, administrators in all agency settings placed more emphasis on Sport Programming and Theoretical Perspectives, with faculty placing more emphasis on Management Techniques and Business Administration. This study reinforces the need for recreational sport administrators to possess a strong management and business base, along with competence in sport programming and recreational sport theory/foundations. Achieving greater understanding of the nature and importance of recreational sport
competencies can help the field become more accountable for its programs in academic preparation, professional training, and continuing education.

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**Biomechanics / Athletic Training**

1. **Muscle activation following sudden ankle inversion during standing and walking.**

   Dynamic response characteristics of ankle musculature following sudden ankle inversion have traditionally been tested in a static, standing position. However, this model does not take into consideration muscle activity and loading characteristics associated with active gait. This study compared muscle reaction times and amplitudes from sudden ankle inversion during standing (standing group) and walking (walking group) using one of two similar devices for each of these conditions. Surface EMG was collected from the peroneus longus (PL), brevis (PB), and tibialis anterior (TA) of the dominant leg from 25 subjects (age 20 ± 1 years, height 174.0 ± 10.2 cm, mass 74.3 ± 12.9 kg) for each condition (walking and standing). Time to total inversion ROM (28°) was greater in the walking group (114.9 ± 15.0 ms) than the standing group (65.6 ± 17.8 ms, P < 0.05), whereas reaction time was less in the peroneals in the walking group (PL 56.9 ± 8.4 ms, PB 60.1 ± 10.6 ms, TA 65.0 ± 14.9 ms) compared to the standing group (PL 74.3 ± 8.5 ms, PB 73.5 ± 8.2 ms, TA 73.3 ± 8.3, P < 0.05). Additionally, Peak normalized EMG (% MVIC) for the walking condition (PL 367 ± 254, PB 405 ± 359, TA 84 ± 39) exceeded that of the standing condition (PL 310 ± 239, PB 328 ± 215, TA 76 ± 39, P < 0.05), and average normalized EMG (% MVIC) was greater in the peroneals for the walking condition (PL 233 ± 171, PB 280 ± 255) than the standing condition (PL 164 ± 131, PB 193 ± 137, P < 0.05). The differences noted between the conditions provide evidence that a dynamic response to ankle injury mechanisms is much different in a walking model compared to a traditional standing model. A walking model may be a more functional approach for evaluating dynamic response characteristics of ankle musculature due to sudden ankle inversion.

2. **Effects of 8-week strength training with two models of chest press machines on muscular activity pattern and strength.**

   The purposes of this study were to assess: (i) the effects of 8-week training programs with constrained-path and unconstrained-path chest press machines on 1-RM; (ii) the different activity patterns of selected arm and shoulder girdle muscles during push movement performed on the different machines; (iii) the transfer of the training effects from one machine to the other. Twenty healthy, sedentary women (mean±SD age, 24.8±1.0yrs), randomized to either the FM or CM strength training protocols were evaluated before and after the strength training program. Muscular activity signals were recorded by surface electromyography (sEMG) from eight muscles while each subject performed the exercise on each machine. Muscle strength was defined by a 1 repetition maximum (1-RM) test for each subject on each machine. Both machines were effective in improving 1-RM, but the 1-RM increased more in the FM
than the CM. Adaptive change in the sEMG was observed in all muscles after training on the FM machine, but not within the stabilizers when training on the CM machine. The results suggest that training in an unconstrained condition provides a more effective method for improving inter-muscular coordination via adaptation of the motor strategy aimed at optimising muscular efforts.

3. **The Role of Shoe Design in Ankle Sprain Rates among Collegiate Basketball Players.**

   Context: Much of the recent focus in shoe design and engineering has been on improving athletic performance. Currently, this improvement has been in the form of "cushioned column systems," which are spring-like in design and located under the heel of the shoe in place of a conventional heel counter. Concerns have been raised about whether this design alteration has increased the incidence of ankle sprains.

   Objective: To examine the incidence of lateral ankle sprains in collegiate basketball players with regard to shoe design. Design: Prospective cohort study.

   Setting: Certified athletic trainers at 1014 National Collegiate Athletic Association (NCAA)-affiliated schools sponsoring basketball during the 2005-2006 regular season were notified of an online questionnaire. Athletic trainers at 22 of the 1014 schools participated.

   Patients or Other Participants: A total of 230 basketball players (141 males, 89 females; age = 20.2 ± 1.5 years) from NCAA Division I-II basketball programs sustained lateral ankle sprains.

   Main Outcome Measure(s): Ankle sprain information and type of shoe worn (cushioned column or non-cushioned column) were collected via online survey. The incidence of lateral ankle sprains and type of shoes worn were compared using a chi-square analysis.

   Results: No difference was noted in ankle sprain incidence between groups (y^2 = 2.44, P = .20, relative risk = 1.47, 95% confidence interval [CI] = 0.32, 6.86). The incidence of ankle sprains was 1.33 per 1000 exposures in the cushioned column group (95% CI = 0.62, 3.51) and 1.96 per 1000 exposures in the non-cushioned column group (95% CI = 0.51, 4.22).

   Conclusions: No increased incidence of ankle sprains was associated with shoe design.

4. **The Acute Effects of Sleeper Stretches on Shoulder Range of Motion.**

   Context: The deceleration phase of the throwing motion creates large distraction forces at the shoulder, which may result in posterior shoulder tightness and ensuing alterations in shoulder range of motion (ROM) and may result in an increased risk of shoulder injury. Researchers have hypothesized that various stretching options increase this motion, but few data on the effectiveness of treating such tightness are available.

   Objective: To evaluate the acute effects of “sleeper stretches” on shoulder ROM.

   Design: Descriptive with repeated measures.
Setting: Biomechanics laboratory and 2 separate collegiate athletic training facilities.

Patients or Other Participants: Thirty-three National Collegiate Athletic Association Division I baseball players (15 pitchers, 18 position players; age = 19.8 ± 1.3 years, height = 184.7 ± 6.4 cm, mass = 84.8 ± 7.7 kg) and 33 physically active male college students (age = 20.1 ± 0.6 years, height = 179.6 ± 6.6 cm, mass = 83.4 ± 11.3 kg) who reported no recent participation (within 5 years) in overhead athletic activities.

Intervention(s): Range-of-motion measurements of the dominant shoulder were assessed before and after completion of 3 sets of 30-second passive sleeper stretches among the baseball players. The ROM measurements in the non-thrower group were taken using identical methods as those in the baseball group, but this group did not perform any stretch or movement between measurements.

Main Outcome Measure(s): Internal and external glenohumeral rotation ROM and posterior shoulder motion (glenohumeral horizontal adduction).

Results: In the baseball group, posterior shoulder tightness, internal rotation ROM, and external rotation ROM were −3.5° ± 7.7°, 43.8° ± 9.5°, and 118.6° ± 10.9°, respectively, before the stretches and were −1.2° ± 8.8°, 46.9° ± 9.8°, and 119.2° ± 11.0°, respectively, after the stretches. These data revealed increases in posterior shoulder motion (P = .01, effect size = 0.30) and in internal shoulder rotation (P = .003, effect size = 0.32) after application of the stretches. No other differences were observed in the baseball group, and no differences were noted in the non-thrower group.

Conclusions: Based on our results, the sleeper stretches produced a statistically significant acute increase in posterior shoulder flexibility. However, this change in motion may not be clinically significant.

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Sport Psychology

1.

The Roles of Perceived Teacher Support, Motivational Climate, and Psychological Need Satisfaction in Students' Physical Education Motivation.

Research illustrates the positive roles of perceived competence, autonomy, and mastery climate and the negative role of performance climate in student motivation in physical education. Less research has examined perceptions of relationships within this setting (i.e., perceived teacher support and relatedness) and their role in student motivation. The purpose of this study was to test the mediating roles of perceived competence, autonomy, and relatedness in the relationship between social contextual factors and motivation in physical education students (N = 508). Results from structural equation modeling showed that perceived competence, autonomy, and relatedness partially mediated the relationship between perceived teacher support and self-determined motivation and that mastery climate related directly to self-determined motivation. The results highlight the importance of perceived teacher support, mastery climate, and relatedness to motivation in physical education.
2. Perceived Motivational Climate and Self-Determined Motivation in Female High School Athletes.

Using self-determination theory (SDT) as a framework, the purpose of this study was to examine the pattern of relationships among dimensions of the perceived motivational climate, athletes' need satisfaction, and self-determined motivation. Female high school-aged athletes (N = 200) from a variety of sports completed questionnaires assessing perceived motivational climate, perceived competence, autonomy, relatedness, and self-determined motivation. Preliminary analyses revealed that the dimensions of a mastery motivational climate positively related to the three needs and to self-determined motivation. Conversely, the dimensions of a performance climate generally negatively related to the three needs and to self-determined motivation. Further, the three needs positively related to self-determined motivation. Structural equation modeling revealed that perceived competence and autonomy positively predicted self-determined motivation. Additionally, punishment for mistakes negatively and indirectly predicted self-determined motivation through autonomy. Results are discussed in terms of SDT and coaching effectiveness.

3. Feedback as a Source of Physical Information: Effects of Age, Experience and Type of Feedback.

The study tested whether experience level moderates the interpretation of coaching feedback as a cue of ability in younger and older children, and examined how descriptive and prescriptive informational feedback are used as a source of competence information. Younger (7-10 years) and older (12-14 years) girls with either high or low experience playing softball watched a series of videotapes depicting four youth sport athletes attempting to hit a softball. After each attempt, whether successful or unsuccessful, a coach was heard giving each athlete a specific type of feedback, either evaluative, descriptive, prescriptive, or neutral. Participants then rated each athlete's ability, effort, and future expectancy of success. Although the hypothesized experience-level by age-group by feedback-type interactions did not emerge, the results showed strong feedback main effects for ability, effort, and future success. Analysis of these results suggest that feedback provides important cues for ability, effort, and future expectations of success in the physical domain, and that children use several cues of competence information in addition to the coach's feedback to derive competence information.