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Special Topic

A Descriptive Analysis of Research Methods Classes in Departments of Kinesiology and Physical Education in the United States (pp. 1-9)
Stephen Silverman and Xiaofen Deng Keating

Research training takes many forms and is generally a part of graduate education. A common and important aspect of research training is the introductory research methods class offered by many departments. The purpose of this study was to examine the content, process, and instructors of introductory research methods classes in departments of kinesiology and physical education in the United States. A survey was designed and extensively pilot tested. The sample was selected from all departments offering graduate degrees in the United States. Among the many results, the data indicate that one book was required reading in more than half the classes and class size averaged about 19 students. A number of objectives were stated for most classes, with understanding research, applying research to professional situations, critiquing the research literature, and planning research indicated most often. Quantitative design and analysis topics were emphasized more strongly than qualitative design and analysis topics. Professors indicated that more than half the class time was spent lecturing and most grades were based on exams, preparation of a research proposal, and regular assignments. The professors were relatively experienced, had a variety of specialty areas, and were reasonably productive researchers. The trends suggest that alternative research methodologies have not been quickly added to the research methods curriculum.

Growth and Motor Development

Arm Movement Control: Differences Between Children With and Without Attention Deficit Hyperactivity Disorder (pp. 10-18)
Jin H. Yan and Jerry R. Thomas

The purpose of this study was to examine performance differences in arm movement control (programming vs. "on-line" control) between children with and without attention deficit hyperactivity disorder (ADHD). Twenty children (10 with ADHD and 10 without ADHD) from the ages of 8 to 13 years participated in the study. On the surface of a digitizer, each participant completed three types of aiming arm movements (10 trials for each) and 10 baseline trials (without accuracy requirement). Multivariate analyses of variance with repeated measures were used to analyze the variables of reaction time, movement time, normalized jerk, intersegment-interval (ISI), and movement timing. Children with ADHD appeared to use "on-line" monitoring during the arm movement and did not perform the entire movement sequence as a functional unit. They executed the arm movements more slowly, had greater variability in movement timing, and demonstrated longer ISIs than their counterparts. Children with ADHD had multiple peaks in the velocity profiles. Children without ADHD, however, appeared to program their entire arm movements and execute the sequence as a unit. Their velocity profiles were symmetrical with a single peak, and the movement segments were temporally coordinated. These findings suggested that cognitive functions are important resources for controlling rapid aiming arm movements. Children with ADHD might rely more on visual feedback during the movements, which resulted in slower and more variant movement outcomes than children who did not have ADHD.

Throwing Patterns Used by Collegiate Baseball Players in Actual Games (pp. 19-27)
David D. Barrett and Allen W. Burton

The form of 3,684 throws made by 100 players in 7 collegiate baseball games was examined in relation to position, distance, and active and inactive situations. All throws made from the first pitch to the last out for 94 half innings were videotaped from the stands. The results showed that the interrater reliability of task, environment, and performance measures were all acceptable to excellent (percentage of agreement was at least 80%), indicating that qualitative aspects of throwing can be reliably measured in an actual sport context. Alternatives to the most advanced pattern were observed at least half the time for catchers and infielders at most distances in both active and inactive situations and for pitchers and outfielders only in inactive situations.

Coincidence Timing of a Tennis Stroke: Effects of Age, Skill Level, Gender, Stimulus Velocity, and Attention Demand (pp. 28-37)
Les R.T. Williams, Will H. Katene, and Kirsty Fleming

Participants (N = 162, ages 10-15 years) performed a tennis stroke in a coincidence-timing task. Major results were: (a) performance improved mainly between the ages of 10-13 years; (b) skill differences were reflected by variable error (VE); (c) boys were lower than girls for VE and absolute error; (d) high stimulus velocity was related to low VE and late responding. Results concerning response organization favored explanations based on ecological perspectives rather than information processing perspectives. However, it is premature to disregard the potential role of programming. The view is supported that a continuous process of coupling perceptual and motor responses coordinates control of response timing. These cognitive processes appear to be: (a) refined with practice; (b) sensitive to differences in age, skill, and gender; and (c) adaptable to changes in environmental demands.

History and Philosophy

Running, Heart Disease, and the Ironic Death of Jim Fixx (pp. 38-46)
Darcy C. Plymire

Jim Fixx was one of millions of Americans who started running in the 1960s, 1970s, and 1980s. Unlike other runners, however, Fixx wrote a best-selling book about running and, ironically, died of a heart attack at the age of 52 years while running. Fixx and the authors of other running books believed heart disease resulted from overcivilization and recommended running as a cure. Running was not merely a physical exercise, according to those authors, but also a way of life. Moreover, those running authors, who were often doctors themselves, advised their readers to listen to their bodies, instead of their doctors. Fixx's adherence to that philosophy offers an explanation for his seemingly irrational behavior-running through chest pain and discomfort.

Motor Control and Learning

The Role of Parameter Variability on Retention, Parameter Transfer, and Effector Transfer (pp. 47-57)
Chad A. Whitacre and Charles H. Shea

The purpose of this study was to examine the effects of parameter variability on the learning of generalized motor programs (GMP) and movement parameterization. Participants attempted to exert a force pattern that resembled in force and time a waveform displayed on a computer monitor. The analysis suggested that relative timing (a measure of the GMP) performance remained remarkably stable across retention and transfer tests, whereby the structure of the movement remained intact, although the parameter or muscle group (effector) changed during transfer. The results also indicated that variable parameter (time) practice did not enhance GMP learning but did degrade the learning parameter that was not varied (force). In addition, parameter specification was substantially less stable than the GMP, with time and force parameter performance deteriorating from the retention to transfer tests. These findings suggest that parameter specification, and not the GMP, is the primary cause of poorer performance in parameter and effector transfer.

Pedagogy

Achievement Goals, Perceived Motivational Climate, and Students' Self-Reported Mastery Behaviors (pp. 58-65)
Ping Xiang and Amelia Lee

Achievement goals and perceived motivational climate are two important constructs in achievement goal theory, and they play critical roles in student motivation and behavior. Traditionally, these two constructs have been examined separately. The present study examined relationships between the two constructs and students' self-reported mastery behaviors as well as age-related differences. Three hundred eight students in 4th, 8th, and 11th grades completed questionnaires assessing their achievement goals, perceived motivational climate, and perceptions of their mastery behaviors. Results indicated that achievement goals and perceived motivational climate were related to students' self-reported mastery behaviors. However, the relations varied depending on the students' ages. The older students, compared to the younger ones, appeared to be inclined more toward ego orientation and the ego-involved climate. A multiple achievement goals perspective is recommended for future research on relationships among achievement goals, perceived motivational climate and achievement-related cognitions, and behaviors in physical education.

Physiology

Prediction of Maximum Oxygen Consumption From Walking, Jogging, or Running (pp. 66-72)
Gary E. Larsen, James D. George, Jeffrey L. Alexander, Gilbert W. Fellingham, Steve G. Aldana, and Allen C. Parcell

The purpose of this study was to develop a submaximal, 1.5-mile endurance test for college-aged students using walking, jogging, or running exercise. College students (N = 101: 52 men, 47 women), ages 18-26 years, successfully completed the 1.5-mile test twice, and a maximal graded exercise test. Participants were instructed to achieve a "somewhat hard" exercise intensity (rating of perceived exertion = 13) and maintain a steady pace throughout each 1.5-mile test. Multiple linear regression generated the following prediction equation: VO2max = 65.404 + 7.707 x gender (1 = male; 0 = female) - 0.159 x body mass (kg) - 0.843 x elapsed exercise time (min; walking, jogging, or running). This equation shows acceptable validity (R = .86, SEE = 3.37 mlokg-1omin-1) similar to the accuracy of comparable field tests, and reliability (ICC = .93) is also comparable to similar models. The statistical shrinkage is minimal (Rpress = 0.85, SEEpress = 3.51 mlokg-1omin-1); hence, it should provide comparable results when applied to other similar samples. A regression model (R = .90, and SEE = 2.87 mlokg-1omin-1) including exercise heart rate was also developed: VO2max = 100.162 + 7.301 x gender (1 = male; 0 = female) - 0.164 x body mass (kg) - 1.273 x elapsed exercise time - 0.156 x exercise heart rate, for those who have access to electronic heart rate monitors. This submaximal 1.5-mile test accurately predicts maximal oxygen uptake (VO2max) without measuring heart rate and is similar to the 1.5-mile run in that it allows for mass testing and requires only a flat, measured distance and a stopwatch. Further, it can accommodate a wide range of fitness levels (from walkers to runners).

Psychology

Coaching Commitment and Turnover: A Comparison of Current and Former Coaches (pp. 73-86)
Thomas D. Raedeke, Anne H. Warren, and Tracy L. Granzyk

Although coaching continuity is thought to be important in developing and sustaining quality sport programs, coach turnover is not well understood. Consequently, we used a commitment model to address why some coaches maintain their involvement while others discontinue coaching. For this study, 469 USA Swimming age-group coaches completed a mail survey designed to assess commitment model constructs, including coaching satisfaction, benefits, costs, investments, alternative options, social constraints, and commitment. To test the commitment model, we first used structural equation modeling to assess whether the model provided an adequate fit to the data for current and former coaches. Overall, satisfaction and investments were significantly related to commitment. Moreover, the standardized path coefficients between benefits and costs and satisfaction were also significant. Multivariate analysis of variance and follow-up analyses revealed that current coaches reported higher commitment as well as less attractive alternative options, higher investments, and higher social constraints compared to former coaches. In replication of past research, we compared current and former coaches on the benefits and costs associated with coaching.

Perceived Control of Anxiety and Its Relationship to Self-Confidence and Performance (pp. 87-97)
Sheldon Hanton and Declan Connaughton

This study examined performers' retrospective explanations of the relationship between anxiety symptoms, self-confidence, and performance. Interviews were used to determine how the presence of symptoms and the accompanying directional interpretation affected performance in six elite and six subelite swimmers. Causal networks revealed that perceived control was the moderating factor in the directional interpretation of anxiety and not the experience of anxiety symptoms alone. Symptoms perceived to be under control were interpreted to have facilitative consequences for performance; however, symptoms not under control were viewed as debilitative. Increases or decreases in self-confidence were perceived to improve or lower performance. Findings reveal how cognitive and somatic information was processed, what strategies were adopted, and how this series of events related to performance.

Research Notes

EMG Power Frequency Spectrum Shifts During Repeated Isokinetic Knee and Arm Movements (pp. 98-106)
Raymond So, Kai-Ming Chan, and Oswald Siu

Visual Search and Biological Motion Perception in Tennis (pp. 107-112)
Paul Ward, A. Mark Williams, and Simon J. Bennett

Physical Self-Concept and Strength Changes in College Weight Training Classes (pp. 113-117)
John G. Van Vorst, Janet Buckworth, and Craig Mattern