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Invited Paper

"Time to Give Freely to Worthwhile Causes;" Anna S. Espenschade's Contributions to Physical Education

Roberta J. Park

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Epidemiology

Understanding Physical Activity Intention in Canadian School Children and Youth: An Application of the Theory of Planned Behavior

W. Kerry Mummery, John C. Spence, and John C. Hudee

The purpose of this study was to investigate the efficacy of the theory of planned behavior in predicting physical activity intention in a nationwide sample of Canadian children and youth. The study sample consisted of participants from Grades 3, 5, 8, and 11 from schools across Canada. School participation was determined by means of a randomly stratified sample design. Results show that the direct measures of the theory of planned behavior explained 47% of the variability in the measure of physical activity intention. In addition, notable differences in the relative contributions of the predictor variables of attitude, subjective norm, and perceived behavioral control were found across grade and grade-by-gender subgroups. The present study provides evidence that in a population of children and youth the determinants display a pattern of change developmentally.

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Measurement and Evaluation

Validation of Criterion-Referenced Standards for the Mile Run and Progressive Aerobic Cardiovascular Endurance Run Tests

Donna M. Chun, Charles B. Corbin, and Robert P. Pangrazi

The purpose of this study was to validate criterion-referenced standards for cardiovascular endurance tests using the criterion-groups validation model. Adolescent boys and girls assigned to either untrained or trained groups were administered the mile run and Progressive Aerobic Cardiovascular Endurance Run (PACER) tests. Selection of optimal criterion standards was based on finding a cutting score that minimized the probability of misclassification errors and maximized the probability of making correct decisions based on participation in physical activity. The results of this study suggest that recent changes in FITNESSGRAM standards are appropriate, especially for the PACER test. While modifications of standards have corrected somewhat for disparities in passing rates between the mile run and the PACER, especially for girls, further study of standards is necessary.

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Motor Control and Learning

Learning and Remembering Strategies of Novice and Advanced Jazz Dancers for Skill

Level Appropriate Dance Routines

Pauline P. L. Poon and Wendy Rodgers

This study examined the influence of the challenge level of to-be-learned stimulus on learning strategies in novice and advanced dancers. In Study 1, skill-level appropriate dance routines were developed for novice and advanced jazz dancers. In Study 2, 8 novice and 9 advanced female jazz dancers attempted to learn and remember the two routines in mixed model factorial design, with one between-participants factor: skill level (novice or advanced) and two within-participants factors: routine (easy or difficult) and performance (immediate or delayed).

Participants were interviewed regarding the strategies used to learn and remember the routines. Results indicated that advanced performers used atypical learning strategies for insufficiently challenging stimuli, which may reflect characteristics of the stimuli rather than the performer. The qualitative data indicate a clear preference of novice and advanced performers for spatial compatibility of stimuli and response.

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Physiology

A Review of the Literature on the Application of Blood Ammonia Measurement in Sports Science

Yvonne Yuan and Kai-Ming Chan

This article summarizes previous studies on blood ammonia levels in relation to exercise. The dynamics of blood ammonia were reviewed with consideration to its production, removal, and distribution in various tissue compartments. During intense exercise, the primary source of ammonia is adenosine monophosphate deamination. Catabolism of branched-chain amino acids becomes important during submaximal exercise. Ammonia response to various types of exercise was also compared to lactate response. A comprehensive summary on factors affecting blood ammonia levels is provided. These reveal the possibility of applying blood ammonia measurement in monitoring and prescribing exercise, indirect measurement of muscle fiber composition, and muscle glycogen levels. However, more studies need to be conducted to evaluate these possibilities before blood ammonia measurement can be widely used.

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Physical Fitness of Adults With an Intellectual Disability: A 13-Year Follow-up Study

Andrew Graham and Greg Reid

The purpose of this study was to describe the change in physical fitness of middle-aged adults with an intellectual disability over a period of 13 years. Participants were 32 adults who worked in a supported work environment in Montreal and had been participants in a physical fitness study in 1983. Using the Canadian Standardized Test of Fitness, the participants were evaluated for cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition. A home visit prior to the testing session familiarized the participants with the test procedures. Two forms of analysis were used to describe the change in fitness over 13 years. First, a 2 x 2 (Group x Time) analysis of variance for each dependent variable assessed change over time. Second, effect sizes were calculated to measure the magnitude of change in fitness over the 13-year period in comparison to those without an intellectual disability. As expected, the physical fitness levels of the participants were low when compared to those without a disability and declined over the 13 years. In addition, the magnitude of change over the 13 years, as compared to those without a disability, was greater for male and female participants for body mass index and percentage of body fat and for female participants for cardiovascular endurance and sit-ups. It appears that adults with an intellectual disability may be particularly at risk for declining health associated with aging and low physical fitness.

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Psychology

The Effect of Psyching Strategy on Neuromuscular Activation and Force Production in Strength-Trained Men

Evan B. Brody, Bradley D. Hatfield, Thomas W. Spalding

Force and electromyographic (EMG) activity of the biceps and triceps brachii were measured in 15 strength-trained men during maximal isometric action of the forearm flexors, with the elbow at 90°, following 20-s periods of psyching (PSY), reading aloud (RA), and mental arithmetic (MA). Perceived arousal and attentional focus ratings for PSY were greater than those obtained for RA and MA, which were undifferentiated. Perceived effort, biceps and triceps EMG, and maximal force did not differ across conditions. Therefore, in highly trained men under conditions of brief exertion, when the biomechanics of the muscular action were controlled, psyching resulted in a perception of enhanced readiness but did not influence force or muscular activation differently from psychological states that were preceded by distraction.

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Testing Relationships From the Hierarchical Model of Intrinsic and Extrinsic Motivation Using Flow as a Motivational Consequence

John Kowal and Michelle S. Fortier

The purpose of this study was to test a motivational model based on Vallerand's (1997) Hierarchical Model of Intrinsic and Extrinsic Motivation. This model incorporates situational and contextual motivational variables, and was tested using a time-lagged design. Master's level swimmers (N = 104) completed a questionnaire on two separate occasions. At Time 1, situational social factors (perceptions of success and perceptions of the motivational climate), situational motivational mediators (perceptions of autonomy, competence, and relatedness), situational motivation, and flow were assessed immediately following a swim practice. Contextual measures of these same variables were assessed at Time 2, 1 week later, with the exception of flow. Results of a path analysis supported numerous links in the hypothesized model. Findings are discussed in light of research and theory on motivation and flow.