

### **Biomechanics**

*Pacing and Performance in Competitive Middle-Distance Speed Skating* (pp. 1–7)

Thomas Muehlbauer, Christian Schindler, and Stefan Panzer

Data from speed skating during World Cup 1,500-m middle-distance races were analyzed to (a) determine the time/velocity distribution during the race and (b) assess the impact of time spent in several race sectors on performance outcome. Absolute and relative sector times for the first 300 m (S1) and the following three 400-m laps (S2–S4) and their associations with total race time were analyzed for 53 female and 61 male skaters. Simple regression analyses revealed that both a short relative sector time later in the race (women in S3:  $p < .001$ ; men in S3:  $p = .001$ ) and a high relative sector time early in the race (women in S1:  $p < .001$ ; men in S1:  $p = .08$ ) were associated with a short total race time in the 1,500-m middle-distance event. These findings suggest that for the best overall time it is important to be as fast as possible later in the race and not quite as fast during the first part of the race. Therefore, speed skating performance may be improved by maintaining a high velocity or by minimizing the decline from a high velocity during later race segments.

### **Epidemiology**

*Exploring Links to Unorganized and Organized Physical Activity During Adolescence: The Role of Gender, Socioeconomic Status, Weight Status, and Enjoyment of Physical Education* (pp. 7–16)

Enrique García Bengoechea, Catherine M. Sabiston, Rashid Ahmed, and Michelle Farnoush

There is limited research on participation context in studies of physical activity correlates during adolescence. Using an ecological approach, this study explored the association of gender, socioeconomic status (SES), weight status, and physical education enjoyment with participation in organized and unorganized physical activity contexts in a representative sample of Canadian adolescents. Drawing on data from the National Longitudinal Survey of Children and Youth (Cycle 3), we conducted multiple logistic regression analyses to model the associations among the variables of interest. Girls participated less frequently in unorganized physical activities than boys (adjusted odds ratios [AORs] ranging from 0.57 to 0.65, 95% confidence intervals [CIs] range: 0.46–0.72 to 0.52–0.81). Adolescents in the middle and high SES categories participated more in organized physical activity than their peers in the low SES category (AOR = 1.40–1.87, CI = 1.06–1.84 to 1.41–2.47). Obese adolescents were generally less active than their overweight and normal weight counterparts, particularly in unorganized physical activity contexts (AOR = 0.63–0.66, CI = 0.43–0.92 to 0.44–0.99). Physical education enjoyment was consistently correlated with participation in organized and unorganized physical activity when all variables were considered (AOR = 1.58–3.98, CI = 1.22–2.05 to 3.14–5.03).

### **Motor Behavior**

*Gender Differences in Fundamental Motor Skill Development in Disadvantaged Preschoolers From Two Geographical Regions* (pp. 17–24)

Jacqueline D. Goodway, Leah E. Robinson, and Heather Crowe

This study examined the influence of gender and region on object control (OC) and locomotor skill development. Participants were 275 midwestern African American and 194 southwestern Hispanic preschool children who were disadvantaged. All were evaluated on the Test of Gross Motor Development-2 (Ulrich, 2000). Two, 2 Gender (girls, boys) x 2 Region (midwest, southwest) analyses of variance were conducted on OC and locomotor percentile rank. Both midwestern and southwestern preschoolers were developmentally delayed in locomotor and OC skills (< 30th percentile). There was a significant difference for gender ( $p < .0001$ ) and Gender x Region interaction ( $p = .02$ ) for OC skills. Boys outperformed girls in the midwestern and southwestern regions. For locomotor skills, there was a significant difference for region ( $p < .001$ ), with midwestern preschoolers having better locomotor skills.

### **Pedagogy**

*Performing Identities in Physical Education: (En)gendering Fluid Selves* (pp. 25–37)

Laura Azzarito and Adriana Katzew

This paper shows how a group of young people and researchers, through their reading of images, performed “identity work” within discourses of the body and gender in physical education. To explore young people’s identity narratives and physicality, the researchers used an ethnographic method using photo-elicitation. Findings in this study showed the complex ways girls and boys, picked up, resisted, and negotiated male and female body signifiers by “doing girl” and

“doing boy” in the school context. Given these results, the researchers discuss several implications for educators and scholars to consider in working toward the new gender agenda in physical education.

*“The Boys Won’t Let Us Play:” Fifth-Grade Mestizas Challenge Physical Activity Discourse at School* (pp. 38–51)  
Kimberly L. Oliver and Manal Hamzeh

Drawing on feminist, critical, and poststructural theories, the purpose of this research was: (a) to understand fifth-grade mestizas self-identified barriers to physical activity, and (b) to work with them to develop strategies for challenging these barriers. Data were collected over the 2005–06 school year. Our interpretations are divided into three sections: (a) the barriers the girls identified to their physical activity participation; (b) how we worked with them to study their primary self-identified barrier to physical activity—“the boy’s won’t let us play;” and (c) how we refocused our research to help the girls publicize their barrier to challenge the inequities in physical activity at their school.

*Perception of Competence in Middle School Physical Education: Instrument Development and Validation* (pp. 52–61)  
Kristin Scrabis-Fletcher and Stephen Silverman

Perception of Competence (POC) has been studied extensively in physical activity (PA) research with similar instruments adapted for physical education (PE) research. Such instruments do not account for the unique PE learning environment. Therefore, an instrument was developed and the scores validated to measure POC in middle school PE. A multiphase design was used consisting of an intensive theoretical review, elicitation study, prepilot study, pilot study, content validation study, and final validation study ( $N = 1,281$ ). Data analysis included a multistep iterative process to identify the best model fit. A three-factor model for POC was tested and resulted in root mean square error of approximation = .09, root mean square residual = .07, goodness of fit index = .90, and adjusted goodness of fit index = .86 values in the acceptable range (Hu & Bentler, 1999). A two-factor model was also tested and resulted in a good fit (two-factor fit indexes values = .05, .03, .98, .97, respectively). The results of this study suggest that an instrument using a three- or two-factor model provides reliable and valid scores of POC measurement in middle school PE.

### **Physiology**

*Personal Best Time, Percent Body Fat, and Training Are Differently Associated With Race Time for Male and Female Ironman Triathletes* (pp. 62–68)

Beat Knechtle, Andrea Wirth, Barbara Baumann, Patrizia Knechtle, and Thomas Rosemann

We studied male and female nonprofessional Ironman triathletes to determine whether percent body fat, training, and/or previous race experience were associated with race performance. We used simple linear regression analysis, with total race time as the dependent variable, to investigate the relationship among athletes’ percent body fat, average amount of weekly training, and best time in an Ironman triathlon. For male athletes, percent body fat ( $r^2 = 0.57, p < .001$ ) was related to total race time but not average weekly training. For women, percent body fat showed no association with total race time; however, average weekly training volume was related to total race time ( $r^2 = .43, p < .01$ ). Percent body fat and average weekly training were not correlated in either gender. Speed in training was not associated with race performance in either gender. For men ( $r^2 = .56, p < .001$ ) and women ( $r^2 = .45, p < .05$ ), personal best time in an Ironman triathlon was related to total race time. We concluded that percent body fat was related to race performance in male athletes and to average weekly training in female athletes. Personal best time in an Ironman triathlon was associated with total race time for both male and female athletes.

*Relationship Between Functional Classification Levels and Anaerobic Performance of Wheelchair Basketball Athletes* (pp. 69–73)

Bartosz Molik, James J. Laskin, Andrzej Kosmol, Kestas Skucas, and Urszula Bida

Wheelchair basketball athletes are classified using the International Wheelchair Basketball Federation (IWBF) functional classification system. The purpose of this study was to evaluate the relationship between upper extremity anaerobic performance (AnP) and all functional classification levels in wheelchair basketball. Ninety-seven male athletes from the Polish and Lithuanian national wheelchair basketball leagues took part in this study. The Wingate Anaerobic Test was used to assess four AnP indexes with an arm crank ergometer. The level of AnP in wheelchair basketball athletes depends to some degree on classification level. No significant differences were found for the AnP indexes across levels 1.0–2.5 and 3.0–4.5. However, the AnP level for those in classes 1.0–2.5 was significantly lower than those in classes 3.0–4.5.

The findings from this study provided some evidence that the IWBF functional classification system should be reexamined and that a consolidation of the current eight levels might be in order.

### **Psychology**

*Perceived Teaching Behaviors and Self-Determined Motivation in Physical Education: A Test of Self-Determination Theory* (pp. 74–86)

Andre Koka and Martin S. Hagger

In the present study, we tested the effects of specific dimensions of perceived teaching behaviors on students' self-determined motivation in physical education. In accordance with the tenets of self-determination theory (Deci & Ryan, 1985, 2000), we expected the psychological needs for competence, autonomy, and relatedness would mediate these effects. Secondary school students ( $N = 498$ ) ages 12–17 years completed measures of perceived teaching behaviors for seven dimensions: (a) democratic behavior, (b) autocratic behavior, (c) teaching and instruction, (d) situation consideration, (e) positive general feedback, (f) positive nonverbal feedback, and (h) negative nonverbal feedback. They also completed measures of perceived satisfaction for competence, autonomy, relatedness, and self-determined motivation. A path-analytic model revealed a positive, indirect effect of perceived positive general feedback on self-determined motivation. The effects of perceived autocratic behavior and negative nonverbal feedback were direct and negative, whereas the effects of teaching and instruction and situation consideration were direct and positive. Results suggest that feedback, situation consideration, and teaching and instruction are essential antecedents to self-determined motivation.

*The Impact of a Student-Led Pedometer Intervention Incorporating Cognitive-Behavioral Strategies on Step Count and Self-Efficacy* (pp. 87–96)

Thomas D. Raedeke, Brian C. Focht, and Jenna S. King

This study evaluated the effectiveness of a student-led physical activity intervention that incorporated pedometers and cognitive-behavioral strategies. Undergraduate students ( $N = 117$ ) enrolled in upper division exercise and sport science courses recruited participants. Participants in the cognitive-behavioral intervention condition received weekly mentoring from students on strategies to foster self-regulation, whereas those in a minimal intervention control condition (i.e., pedometer and self-monitoring) did not. All volunteers wore a pedometer for 6 weeks, maintained a step-count log, and completed physical activity and barrier self-efficacy measures pre- and postintervention. Repeated measures analysis of variance revealed that intervention condition participants increased their steps more so than those in the control condition,  $F(5, 570) = 10.1, p < .0001$ , starting at Week 3, with effect sizes in the moderate range. Intervention condition participants also reported increased physical activity self-efficacy, whereas those in the control condition did not,  $F(1, 77) = 5.6, p < .03$ , Cohen  $d = .47$ . There were no significant changes in barrier self-efficacy for either group. Overall, these findings suggest a student-led cognitive-behavioral pedometer intervention results in more favorable changes in step counts and physical activity self-efficacy than simply wearing a pedometer and self-monitoring step counts.

### **Research Notes**

*Reliability and Validity of the International Physical Activity Questionnaire for Assessing Walking* (pp. 97–101)

Hidde P. van der Ploeg, Catrine Tudor-Locke, Alison L. Marshall, Cora Craig, Maria Hagströmer, Michael Sjöström, and Adrian Bauman

*Associations Between Motivational Orientations and Chronically Accessible Outcomes in Leisure-Time Physical Activity: Are Appearance-Related Outcomes Controlling in Nature?* (pp. 102–107)

Sarah McLachlan and Martin S. Hagger

### **Commentary**

*Comments on the Classic Henry and Rogers (1960) Paper on Its 50th Anniversary: Resolving the Issue of Simple Versus Choice Reaction Time* (pp. 108–112)

Stuart T. Klapp