

BACKGROUND: Physical performance testing is required in Turkey on entry to undergraduate study in physical education (PE). However, there is no standard test battery across academic institutions.

PURPOSE: This investigation compared a laboratory cardiorespiratory (CR) fitness evaluation with field testing in a convenient group of first year students at an accredited undergraduate PE program.

METHODS: Twelve apparently healthy athletic male undergraduate PE students (mean age=19.5, $SD=1.5$) individually performed laboratory cardiopulmonary exercise testing (CPET), the Cooper 12-minute Run (C12RT) and the Shuttle Run (SRT) field tests one week apart. Body composition including detailed segmental analysis was also assessed with a Full Body BIA Analyzer.

RESULTS: The mean CPET VO_2 max was 64.21 ml/kg/min ($SD=7.3$) with a superior age-gender fitness classification (>55 ml/kg/min; $>95^{th}$ percentile). Both the C12RT (Mean=59.54 ml/kg/min, $SD=7.1$) and SRT (Mean=60.67 ml/kg/min, $SD=3.8$) correlated with CPET ($p<0.05$). The mean Mass of Body Fat and Body Fat% was 10.9, $SD=2.4$, and 16%, $SD=2.8$ respectively. The mean Lean Body Mass was 56.76 kg, $SD=6.8$.

CONCLUSIONS: The field tests were valid and practical methods of measuring CR fitness in this sample group. **Future Directions:** PE teachers can positively influence students by modeling an active lifestyle to promote physical fitness. The identification of an approved comprehensive physical performance test battery for PE programs in Turkey may provide an opportunity for benchmarking across academic institutions.

264 Board #80 May 27 9:30 AM - 11:00 AM

Effects Of A Race Timer On The 3 Minute All-out Test For Critical Power

Paul Mandell¹, Boe Burrus², Taylor Bloedon¹. ¹Humboldt State University, Arcata, CA. ²Gonzaga University, Spokane, WA.

Email: pkm80@humboldt.edu

(No relationships reported)

The Critical Power (CP) model provides a valuable insight into the physiological capacities of an individual to perform work by profiling both aerobic and anaerobic capacities. The 3 Minute All-Out Test for Critical Power (3MT) was developed as a time conscious method for obtaining CP as well as providing insights into the amount of work done above CP (WEP). Concerns about pacing during the test lead researchers to develop a protocol which blinds participants to time during the 3MT. Due to the role that knowledge of time plays in anticipation, pacing, and decision-making during exercise, this protocol may lead to inaccurate results obtained from the 3MT.

PURPOSE: To investigate the effects of incorporating a race timer in the 3MT.

METHODS: Twelve healthy active males (Age: 24.9 ± 2.2 yrs; Height: 180.4 ± 7.5 cm; Weight 78.1 ± 6.6 kg; VO_{2peak} 53.9 ± 6.1 ml.kg.min) completed one VO_{2peak} test and one 3MT familiarization trial before completing one standard 3MT and one 3MT with the presence of a countdown race timer in a randomized and counterbalanced order. Paired T-tests were used to compare CP, WEP, PPO, Mean Power, Total Work, VO_{2peak} , & HRmax.

RESULTS: CP was significantly higher in the timer condition (Timer: 276.7 ± 49.6 Watts vs. Standard: 267.51 ± 44.54 Watts, $p = 0.02$) while WEP was significantly lower in the timer condition (Timer: 12.47 ± 4.01 kJ vs. Standard: 13.71 ± 4.34 kJ, $p = 0.004$). No significant differences were observed in PPO, Mean Power, Total Work, VO_{2peak} , & HRmax between trials.

CONCLUSION: These results suggest that the knowledge of time (elapsed or remaining) may have a significant impact on CP and WEP in the 3MT. This impact may be due in part to the role that knowledge of time plays in pacing and decision making, and fits within the framework of the Affordances Competition Hypothesis. These findings warrant further investigation in more experienced cyclists in order to better understand what role knowledge of time plays in the 3MT.

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Shuttle Run And Performance In Aerobic And Anaerobic Capacities.

Nathaniel J. Holmgren, Gianna D. Maragliano, Lena Perry, Karlijn B. Roijackers, Courtney D. Jensen. *University of the Pacific, Stockton, CA.*

(No relationships reported)

Field hockey is a physiologically demanding sport with intermittent bouts of aerobic and anaerobic performance. The ability to assess player condition is vital to coaching success. In place of VO_{2max} , the 20-meter shuttle run test (SRT) is a common alternative for on field determination of a player's aerobic fitness. Limited data supports the relationship between shuttle run and anaerobic fitness in this population.

PURPOSE: To determine the accuracy of a shuttle run test (SRT) as a predictor of field hockey performance.

METHODS: We enrolled 19 D1 field hockey players (18-22 years old) in an 11-week prospective study. Goalies and injured players were excluded from the study. A 6-week program prior to the study consisted of a 20m shuttle run during practice. Speed was gradually increased by 0.5 km/h at a time, each increase in running speed was coded as a change in level. A Polar Pro GPS/heart rate recorder (Polar Electro Inc. Bethpage, NY) recorded effort parameters during 43 practices. Data included time in heart rate (HR) zone 4 (80-89%) (sec), time in HR zone 5 (90-100%) (sec), percentage of HR max (%) total distance covered (m), distance/min (m/min), maximum speed (km/h), number of sprints (acceleration >1.9 m/s²), and distance in speed zone 5 (>19.00 km/h) (m). Bivariate correlations and linear regressions tested relationships between SRT and on-field performance.

RESULTS: SRT was significantly related to total distance covered ($r=0.090$, $p=0.022$), distance per minute ($r=0.112$, $p=0.004$), maximum speed ($r=0.097$, $p=0.013$), distance in speed zone 5 ($r=0.119$, $p=0.002$), and number of sprints ($r=0.188$, $p<0.001$). No other relationships were detected. Better performance on the SRT corresponded to more (and more frequent) in-practice sprinting.

CONCLUSION: Although the SRT may not provide a valid estimate of VO_{2max} , it is a valid predictor for many components of on-field performance. It associates with total distance, distance per minute, maximum speed, distance in speed zone 5, and number of sprints in collegiate field hockey players.

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Stroboscopic Vision-induced Sensory Reweighting During Postural Control

Hwiguem Jeong, J. Ty Hopkins, FACSM, Seunguk Han, Hyunwook Lee. *Brigham Young University, Provo, UT.* (Sponsor: Ty Hopkins, FACSM)

Email: hwiguem@gmail.com

(No relationships reported)

Human postural control is achieved by dynamic reweighting of sensory inputs among visual, vestibular, and somatosensory systems in accordance with an external environment. However, due to experimental limits, little is known how partially disrupted visual inputs affect postural control.

PURPOSE: The purpose of this study was to explore the effects of stroboscopic glasses on postural control.

METHOD: 24 healthy people (M: 12, F:12, Height: 172.1 ± 7.8 , weight: 67.5 ± 10.4) performed balance tests (jump landing balance and single leg balance) with 3 sets of 10 second, respectively. While the jump landing test has three conditions (eyes-open (EO), and high and low strobe vision (HSV, and LSV) respectively), the single-leg balance has four conditions (EO, HSV, LSV, and eyes-closed (EC)). These two balance tests will be implemented on a firm surface and a foam surface. Main outcome measure were dynamic postural stability index (DPSI) and the center of pressure (COP) excursion with 2 directions (anterior-posterior (A/P) and medial-lateral (M/L)). For the surface conditions, student-t test was used. For DPSI and COP excursion, an analysis of variance with repeated measures was performed to determine difference in balance performance between these visual conditions.

RESULT: In the jump landing balance, DPSI was greater on the foam than the firm ($p = .0474$). Likewise, in the single leg balance, CoP excursion was greater in both A/P and M/L on the foam than the firm ($p < .0001$). For the vision conditions, in the jump landing balance, DPSI was greater in HSV and LSV than EO ($p = .0100$ and $p = .0013$, respectively). In the single leg balance, CoP excursion was greater in EC, HSV, and LSV than EO ($p < .0001$). Additionally, CoP excursion in EC was greater than HSV and LSV ($p = .0012$ and $p = .0093$, respectively). In the single leg balance, both HSV and LSV showed greater interaction with foam in both A/P and M/L than the firm (6% up to 22%).

CONCLUSION: The effects of stroboscopic glasses on postural control were less than the effects of eye-close. The subjects seemed to rely more on visual inputs to stabilize posture in an unstable condition. The stroboscopic glasses, that can adjust visual inputs, may be used to measure the reliance of visual inputs in those who have reduced or altered somatosensory function.