TEST-RETEST RELIABILITY OF DIFFERENT TEST CONCEPTS IN ICE SLEDGE HOCKEY

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Introduction

- Minimal measurement error during the collection of interval- and ratio-type data is important in sport science.
- The main components of measurement error are systematic bias due to learning effects and fatigue, and random error due to biological or mechanical variation.
- The main measures of reliability are within-subject random variation, systematic change in the mean, and retest correlation (Hopkins 2000).
Introduction

• Ice sledge hockey is characterized by a constant alternation between short dashes, stopping actions and circle moves leading to multiple changes of work load and intensity

• We developed and validated test concepts that reflect some of these sport-specific characteristics

• The reproducibility of performance and movement characteristics of these tests require further examination
Aims of the study

• To establish the test-retest reliability of
  1) performance and movement characteristics of 30 m maximal sprinting
  2) performance during a complex technique test
     .....in elite ice sledge hockey players
Methods

• 12 elite ice sledge hockey players from the Norwegian national team performed the following tests on ice:
  1. 3 x 30-m maximal sprint
  2. 3 x complex technique test while controlling the puck
Methods

• Measurements
  – Test times were recorded by fixed light sensors
  – Cycle time and was analyzed by video analysis
  – Additional analyses using accelerometers and INS technology

• Calculations of measurement error were carried out according to Bland & Altman (1999) and Hopkins (2000):
  – The repeatability coefficient (CR)
  – Standard error of measurement (SEM)
  – Intraclass correlation analysis (ICC)
Results

30 m sprint

- Performance: $6.46 \pm 0.45$ s
  - $CR = 0.24$ s $- 4\%$
  - $SEM = 0.08$ s $- 1.2\%$
  - $ICC = 0.991$

- Cycle time: $0.54 \pm 0.05$ s
  - $CR = 0.04$ s $- 7\%$
  - $SEM = 0.01$ s $- 2.4\%$
  - $ICC = 0.979$
Results

Technique test
- Performance: 26.75 ± 3.31 s
  - CR = 3.53 s – 13%
  - SEM = 1.14 s – 4.3%
  - ICC = 0.940
Discussion and Conclusions

• The 30-m sprint test has a relatively low typical error and appears to be a useful practical tool in further investigations

• The more complex technique test may be questioned due to its high within-subject variation

• Reasonable precision for estimates of reliability requires approximately 50 study participants and at least 3 trials (Hopkins 2000)
Technique

Physiology

Equipment
Questions?