



THE IMPACT OF MENTAL FATIGUE ON MOVEMENT VARIABILITY IN BASKETBALL SHOOTING



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INTRODUCTION

Mental fatigue refers to the psychobiological state that people experience after or during long periods of demanding cognitive activity. Neural alterations have been associated with this state and its detrimental effects have been proved on cognitive skills (e.g., attention), as well as on exercise tolerance (1).

Whereas mental fatigue does not strongly interfere with simple and automated tasks, it impairs performance in complex tasks where cognitive control processes are involved (2).

For experienced basketball players, performing a shot is a highly automated, low cognitive control ability. In motor tasks of this sort, low levels of between-joints variability indicate stronger movement automation and are directly related to better ball release parameters and success in shooting (3).

AIM AND OPEN-HYPOTHESIS

To analyze how mental fatigue affects player's coordination variability, ball release parameters and success in basketball shooting.

H1. Mental fatigue could moderately impair cognitive function in favor of the automated pattern (basketball shot). Players' coordination should show lower variability, better ball release parameters and a higher success rate in the Fatigue Condition than in the No Fatigue Condition.

H2. Mental fatigue could highly impair cognitive function at the expense of the automated pattern (basketball shot), due to over-depletion of attentional resources. Player's coordination should show higher variability, worse ball release parameters and lower levels of success in the Fatigue Condition than in the No Fatigue Condition.

METHOD

Sample. 30 shots in each condition from 12 experienced basketball players (minimum 8 years of experience).

Stimuli and Materials. Mental fatigue was induced by performing the AX-CPT for 90 min (1). VICON System was used to measure VD1 and VD2.

Variables.

-VI: Mental Fatigue.

-VD1: Kinematics variables: Elbow-wrist coordination variability.

-VD2: Ball release parameters. Maximum speed of the ball's center of mass.

-VD3: Shooting effectiveness.

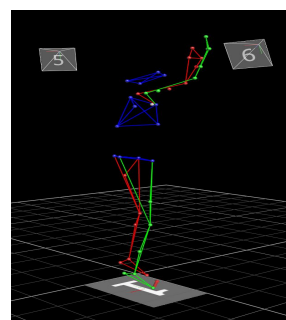
Procedure.

VI.C1. No Fatigue

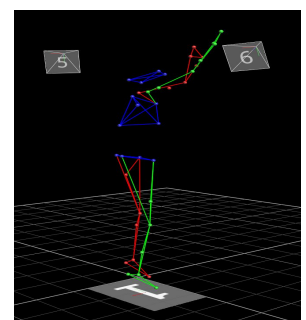
VI.C2. Fatigue

0.5 sec. before ball release

Ball release



VD1 Measure



VD2 Measure

Hit / Miss

VD3 Measure

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