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SKILL ACQUISITION IN BASKETBALL AFTER FATIGUING EXERCISE

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Introduction

When children intend to learn a new skill in their sports training, the question arises how much activation is necessary for optimal learning. The theory says that, during a training session, beginners should do skill acquisition training before fitness training (e.g. Schnabel, 1998; Hohmann et al., 2002). However, there exist some findings that even high loads do not influence the learning process negatively when a new simple motor skill is acquired (Olivier 1996). The aim of the present study was to check whether these findings hold in a sport specific setting for a complex task.

Method

122 young basketball players (27 female, 95 male, age 12.3 ± 1.0 years) of 9 different teams learned the hook shot. After a pre-test containing of 15 shots in a relaxed state and 15 shots in a fatigued state the subjects were organised in two parallel treatment groups. One group performed the skill acquisition training after a short warming-up (non-fatigue group (NF)), the other group after a fatiguing basketball specific circuit training (fatigue group (F)). After 12 training sessions the results of skill acquisition were measured in a post-test.

Results

The three-way repeated measures ANOVA showed a significant interaction between the factors time, treatment and skill level ($F=8.652$; $p=0.004$) for the shots performed in relaxed condition. While the advanced group had non-significant better learning results when practicing under heavy loads ($F=3.059$; $p=0.089$) the group of beginners practicing under fatigue learned significantly less than the relaxed group ($F=5.836$; $p=0.021$). The same tendency is found for the transfer test performed under fatigued conditions. For the advanced group again there was no significant difference between the F-group and the NF-group. Beginners of the F-group, however, learned significantly less than the NF-group ($F=12.369$; $p=0.001$), even though the situation during training was the same as during testing. This is in contrary to the specificity-hypothesis (Magill, 1998). Nevertheless the study confirms the recommendations for skill acquisition. Absolute beginners should learn complex sports skills under non-fatigued conditions. If the skill is controlled to some extent, however, the combination of fitness training and technical training seems to be more advantageous.

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