

SINGLE-LEG STABILITY TEST FOR KNEE JOINT IN ALPINE SKIERS

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INTRODUCTION: Alpine skiing is a specific activity which demands of a skier good preparedness as well as developed numerous specific abilities. In alpine skiing, and this particularly pertains to the competitive skiing, knee joint is probably the most used joint that also suffers the greatest work-loads, which also makes it the most prone to injuries. The aim of this paper is to investigate the biomechanics of the knee joint which could point towards the existence of injury, therefore reducing the competitive efficiency in alpine skiing.

METHOD: The sample comprised 10 adult males with ACL reconstruction and with no subjective signs of a knee joint injury. For subjective evaluation of the knee joint condition, questionnaire "2000 IKDC" was used, which is a standard method used in the USA. The subject completed the exercise which comprised maximal vertical jump (three tries with both left and right leg) which encompasses concentric as well as eccentric phase which are crucial in alpine skiing. In order to collect kinematic data (knee valgus-varus, rotation and flex-extension degree) ELITE system with 8 cameras was used, and in order to collect ground reaction forces (fore-aft. shear, medial-lateral shear and vertical force) Kistler's 60x40 cm platform was used.

RESULTS: Results of 2000 IKDC test did not produce statistically significant differences between left and right knee joint. Correlation analyses and t-test results of the three phases of vertical jump are presented in Table 1.

DISCUSSION: Poor subjective evaluation of the knee joint function (2000 IKDC) can not only impact the sports performance, but also increase the risk of injury. Although no differences were observed in the first and the third phase of the vertical jump, the phase that is the least explored (flight phase) indicated significant differences (see Figure 1.). Such differences indicate functional deficiency, or absence of proprioceptive sense in the knee joint which has a role in joint stability.

CONCLUSION: Results indicate that the protocol might be used in the analyses of the knee joint function as well as the predictor of possible injuries in alpine skiers.

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Table 1. Results of analysis in position flex-extension in knee joint
Results of correlation and t-test analysis

	Correlation	T-test
Take-off	0,99	0,94
In flight	0,88	0,01
Lannding	0,97	0,73

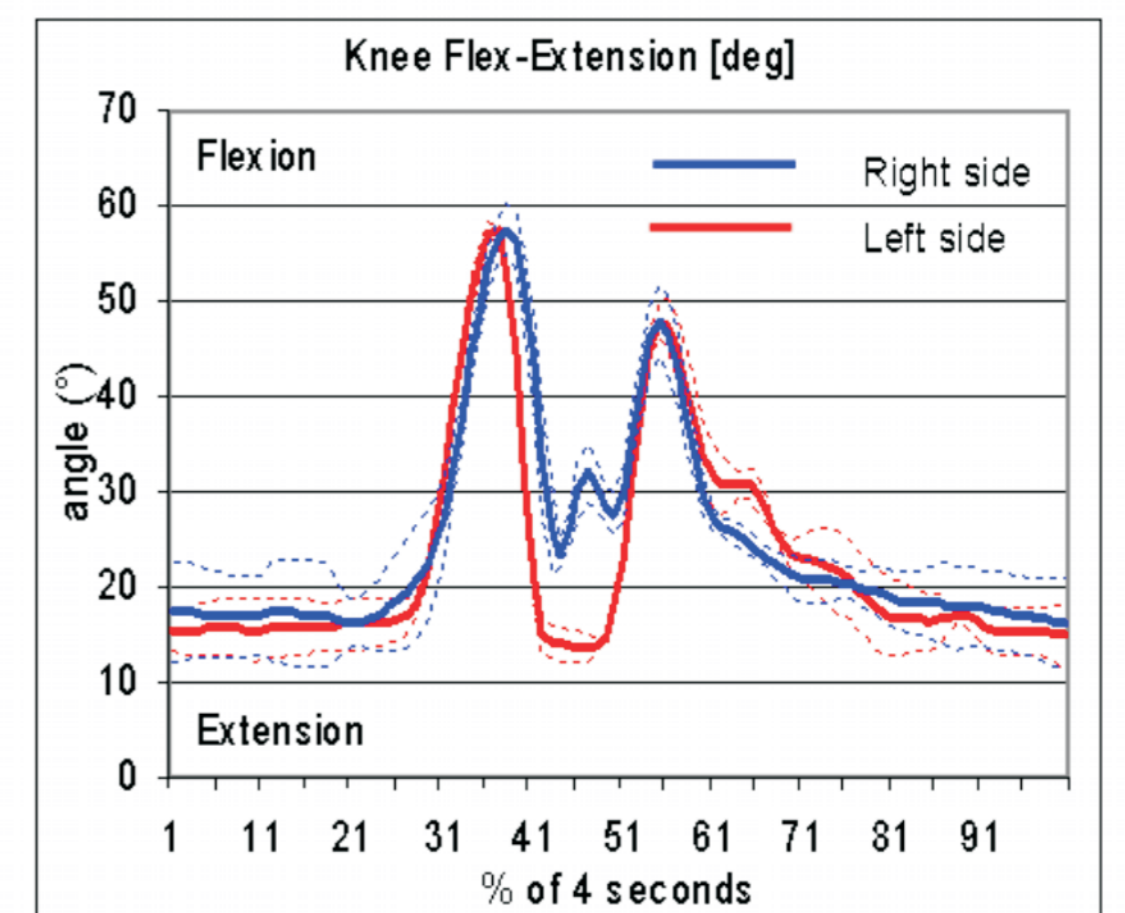


Figure 1. Differences in kinematics data between to knee joint



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