

**SUCCESS AND TALENT DEVELOPMENT AS
INDICATED BY MOTOR TESTS AND
PSYCHOMETRIC VARIABLES OF U18 ICE
HOCKEY PLAYERS**

PhD dissertation

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INTRODUCTION

There are differences in skills, factors of condition, coordination, and also psychological and mental abilities that determine membership of elite athletes in all sport. Similarly, ice hockey players of different levels and ages have different inborn and learned abilities that ensure a high level of achievement.

Ice hockey one of the fastest and multifactorial team sport on the world requires players to possess a number or different attributes (Vescovi et al, 2001). Also, ice hockey is characterized by high intensity intermittent skating, rapid changes in velocity and duration, and also frequent body contact (Montgomery, 1988). The success in this spectacular sport mainly depends on not only the player efficacy, but more on team efficacy, understanding, communication,

cooperation, and team performance and humble (Feltz & Lirgg, 1998). According to the related literature, most young players do not seem to have the necessary skills and/or abilities to use psychological skills in their practice and games (Humara, 2000).

Altogether these factors in elite ice hockey require adequate gift and talent that is assessed and developed by well-trained coaches (Géczi & Bognár, 2004), good conditional (Geitner et al, 2006; Green et al, 2006) and coordination skills (Wu, 2002), and tactical preparedness (Cernjul, 1999).

Successful players demonstrate a high level of so-called hockey sense (Martell & Vickers 2004) and also strong mental, psychological characteristics (Géczi et al, 2008; Lauer, 2005). Besides, ice hockey demands well-

trained aerobic and anaerobic energy systems and also an optimal body composition (Green et al, 2006).

AIM OF THE STUDY

The purpose of this dissertation was to analyze and determine motor and psychometric factors which are the most deciding factors to the successful selection of the U 18 National team. Further to analyze the differences between the Selected and Non-selected players comparing the results of both groups. And to direct the coaches in the practice, that they should force the adequate skills improvement during the youth development program.

METHODOLOGY

Participants

All players that attended this try out were preselect and sent by club coaches to participate in the study, so altogether 40 U18 players did all the on-ice and off-ice motor tests and filled out all psychometric measures. From the players that participated in this particular study, 20 were U18 National team Selected members ($M_{\text{age}}=16,45$, $SD=,512$) and another 20 Non-selected players ($M_{\text{age}}=16,62$, $SD=,50$).

Methods

In order to answer the research questions, a number of motor and psychological tests were administered. 19 on-ice and off-ice motor tests were processed. Also, Athletic Coping Skills Inventory (ACSI-28), Perceived

Motivational Climate in Sport Questionnaire-2 (PMCSQ-2), Sport Motivation Scale (SMS), State-Trait Personality Inventory (STPI-Y).

Height and weight were taken by technicians. At the beginning of the tests, every player was given clear instructions about the purpose and methods of the tests. The motor tests were administered at an ice rink and the off-ice tests were administered at the Track and Field stadium. Both series were conducted by the officials and coaches of the Hungarian Ice Hockey Federation. Participation was voluntary and corresponded to all procedures of human protection.

Data analysis

A series of motor and physical tests, and also psychometric measures were administered among those

U18 (under 18 years of age) Hungarian ice hockey players who attended at the official final selection stage recruiting for the U18 National Team in May, 2007. In the study there was compared in a series of motor tests and measurements between Selected and Non-selected players.

Participation required approximately 5 hours which included motor testing procedure and completion of all psychometric questionnaires.

Descriptive data for all variables are described by mean (M) and standard deviation (SD). In order to answer the results questions, data of Selected and Non-selected ice hockey players were statistically compared. For the comparison Independent T-test was conducted. Additionally, after checking for Normality and Homogeneity of variance assumptions, discriminant

analysis was calculated to build a predictive model of group membership. Stepwise discriminant analysis was used for differentiating motor and psychometric differences between Selected and Non-selected U18 players. SPSS 17.0 for Windows statistical program was utilized for data processing and the p level was set at the .05 level.

All U18 players and their coaches were contacted before the try out and were informed about the purpose of the study. Upon receiving their support, all participants signed an informed consent and all parents supported their child in taking part in the testing process.

RESULTS

Most tests and measurements in this research project do not make a lot of difference between Selected and Non-

selected players. Surprisingly there were only two On-ice tests and one Off-ice test with significant differences. The author found one subscale with significant difference both in ACSI-28 and PMCSQ-2 tests. SMS and STPI-Y did not produce any significant differences between the groups.

There were only two tests with significant differences on-ice, the Crossover with Puck and the Passing Skill drills.

The body mass index (BMI) showed us that there were no significant differences between the Selected and Non-selected groups. The measured indexes of the body mass were not far from each other, but the Selected players were more suited to modern ice hockey. In the elite level of this age group there are not overweight

players, and by the selections in the clubs big differences in this field were avoided.

The off-ice examination showed there were significant differences only in the 1500 m running. The measurements reveal mostly better results for the Selected players.

There were only small differences in ACSI-28 as well. In the subscales of ACSI-28, Peaking under pressure, Concentration, and Confidence and achievement motivation seem to be a bit higher than the other subscales. Controversial, Freedom from worry and Coachability seem very low.

Non-selected ice hockey players demonstrate significantly higher Unequal recognition values than that those of Selected ice hockey players. It depends on the coaches' behavior, and the feeling of the players about

themselves. Also the perceived motivational climate transmits signals, which appeal to the players.

Based upon the statistics of SMS, the low Amotivation, the medium level of Extrinsic motivation, and a relatively high level of Intrinsic motivation warn us, that both of the examined groups were committed to ice hockey. This is very important in ice hockey, so combined with humility and hard work; the players are motivationally able to achieve great careers in sport. There were no significant differences between the two groups in STPI-Y.

When searching for more meaningful differences; Discriminant analysis showed 8 variables that differentiate between the two groups of players: Unequal recognition, Concentration, Peaking under pressure,

BMI, 36m back skating, Freedom from worry, Trait depression, and Intra-team member rivalry.

CONCLUSION

The study resulted less significantly differences between both groups; the pre-selection in the clubs seemed being successfully. Also the “Coaches eyes” by the Federation employed coaches mostly showed good result.

The main findings of my study were to determine the deciding factors to be successfully selected to the U18 National ice hockey team on the examined participants. According to T-test, there were significant differences between Selected and Non-selected U18 players in these tests: Crossover test with puck, Passing skill drill (sec), 1500 m track, Freedom from worry and Unequal recognition.

We can recognize that the clubs did not take enough attention to develop the psychometric skills (Bognár et al, 2009). The coaches should be open-minded to get new information, which are crucial to the excellent performance.

Discriminant analysis showed that the discriminating factors were in the sample: Unequal recognition, Concentration, Peaking under pressure, BMI, 36 m backward skating, Freedom from worry, Trait depression and Intra-team member rivalry.

Further studies needed to understand motor and psychometric characteristics of elite young players. Hence, it is worth examining how age is a factor in motor and psychometric variables (U16, U18, U20, adult team). Furthermore longitudinal studies might be useful for understanding the processes and development stages of

the young player can help the planning process. As well as comparisons with players from other sports than ice hockey may be useful for talent development purposes.

PUBLICATIONS OF GÁBOR GÉCZI:

Publications related to the topic in international journals:

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