

Predicting Sustained Participation in Competitive Sports: A Longitudinal Study of Young Track and Field Athletes

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ABSTRACT

This study looked at the role of goal orientation and perceived competence, as well as interaction of the two, in young the athletes. Past research has suggested that task orientation more often than ego orientation protects sport participants from disappointments and lack of motivation, especially when ego orientation is combined with low perceived ability. Accordingly, emphasis on task orientation and high perceived competence should lead to a greater persistence, and a reduced drop-out rate, when an athlete's performance is exceeded by others in competitive situations. A prospective, longitudinal design was used to determine causal effects over a 3.5 years period (2002 to 2005) in Finnish junior athletes (n=1,747). The authors found that self-reported task orientation and perceived competence correctly predicted sustained participation in competitive athletics in 70.1% of cases. In contrast to findings in past literature, it appears that ego orientation does not seem to play any role in predicting persistence. The results suggest that the investigation of goal orientation together with perceived competence may provide additional information concerning young athletes' persistence in sport, even in the face of failures and disappointments, and help to inform strategies to reduce dropout.

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Introduction

Dropout or withdrawal from organised youth sports has become a central topic among sport organisations and clubs as well as in sport and exercise sciences. The reason is evident: more than one-third of all participants between 10 and 17 years of age quit their sport every year (GOULD & PETLICHKOFF, 1988), although the attrition rates may vary depending on the sport and population in question (WEISS & PETLICHKOFF, 1989). Too little is known of the sport participation process over several years

in the life of young athletes to understand the mechanics of withdrawal or sustained participation in competitive youth sports.

In the present study, young track and field athletes were followed from the age of 15 to 18. Loss of achievement motivation is an obvious reason for quitting competitive sports at that age. An attempt was made to examine this issue based on the achievement goal theory (AGT) of motivation developed by NICHOLLS (1984, 1989), which follows from the idea that achievement is a manifestation of the goals an individual sets, and that there are several qualitatively different types of goals involved in achievement. Goal setting is a social-cognitive process in the sense that goals are not set in terms of records, times and scores, but are set in terms of what an individual thinks is success or achievement, and which goals he or she conceives to maximise achievement in the particular social context.

The AGT has emerged as one of the most prominent theories of sport-specific achievement motivation (DUDA & NICHOLLS, 1992; ROBERTS, 2001). According to it, there are two dispositional perspectives, task and ego orientation, which determine how subjective success is evaluated. Task orientation refers to self-referenced perception of ability. In a state of task involvement, the individual believes that subjective success is evidenced through developing skills, exerting effort, and improving personal performance. Conversely, when ego-involved, the individual's focal concern is towards demonstrating superior competence based upon normative comparisons relative to others.

Past research on goal orientation and persistence has suggested that a task orientation more often than the ego orientation protects the athlete from disappointments and a lack of motivation (BIDDLE et al., 2003; CURY, et al., 1997; DUDA, 1989; WHITEHEAD, 1990). Accordingly, emphasis on task orientation can be expected to lead to a stronger persistence. Much of the empirical evidence is derived from studies correlating goal orientation with

other questionnaire measures presented at the same time, but not with such behavioural variables as participation in sports. In their review of empirical studies, BIDDLE et al. (2003) found positive associations of behavioural variables with task orientation, but not with ego orientation. However, behavioural variables included also other variables than persistence and only one (SPRAY, 2000) of the 25 reviewed studies was longitudinal, and even that study was related to physical education rather than to competitive sports.

FOX & CORBIN (1989) suggested that the effects of ego orientation are manifested through its interaction with task orientation. NICHOLLS (1989) conceived ego and task orientations as independent of each other, and the results from subsequent empirical studies have supported this view (CHI & DUDA, 1995; Robets et al., 1996). Consequently, all the combinations or profiles of ego and task orientation (low-low, low-high, high-low, and high-high) should be found. Comparing participation in competitive sports for the various goal orientation profiles is the same as finding out the interactions of ego and task orientation in predicting participation. Direct empirical evidence of the interactive effects related to sports is, however, still missing (HARWOOD et al., 2000).

Persistence in sports depends also on perceived competence (FOX & CORBIN, 1989), and in competitive sports perceived competence could be expected to be decisive for persistence. In the AGT, the interplay of perceived competence with goal orientation is considered important also for understanding motivation (NICHOLLS, 1989; DWECK, 1999). It is assumed that the likelihood of withdrawal from sports will increase if a person whose goal is to beat others (high ego orientation) experiences little success (low perceived competence). The other three combinations of low and high ego and task orientations are not assumed to have any effect on persistence.

It could be expected that an interaction of ego orientation and perceived competence in

predicting persistence in competitive sports should be found, but empirical evidence is inconsistent. Cross-sectional studies have not consistently supported the hypothesis of interaction of ego orientation and perceived competence (CURY et al., 1997; LIUKKONEN et al., 1998). In a longitudinal study of track and field athletes, WHITEHEAD et al. (2004) did not find any interaction between dispositional goal orientation, perceived ability and sport persistence.

The study by PAPAIOANNOU et al. (2006) seems to be the only longitudinal study of the relationships of sports activity examining both goal orientation and perceived competence. As the part of a larger study, the authors followed up the development of task orientation, ego orientation, perceived competence, and frequency of sport and exercise involvement (SEI) outside school for 14 months among 882 pupils from fifth to eleventh grade. Using structural equation modelling, task orientation had an effect to the SEI 7 fourteen months later. The relationship of task orientation and SEI was reciprocal, i.e. the SEI also affected task orientation. Ego orientation was not related to SEI. Perceived competence had a causal relationship with SEI over the whole 14 months period, and reciprocally, SEI had a causal effect on perceived competence. The interaction effects of ego orientation with task orientation and perceived competence were not related to SEI. The effects of age were also studied and task orientation, perceived motivation, and interest in sports activities were found to decrease during the follow-up period.

The results of the PAPAIOANNOU et al. (2006) study lend support to the view of the positive effects of task orientation and perceived competence and of the lack of any effects of ego orientation. The study was exceptional in demonstrating also the positive reciprocal effects of sport and exercise involvement on the development of task orientation and perceived competence. Although some of the participants in the study must have been competitive athletes, the results cannot be di-

rectly generalised to competitive sports without further study.

Based upon the AGT, several hypotheses can be derived for predicting persistence in competitive sports with goal orientation and perceived competence. However, much of the empirical research is related to verifying the hypotheses in fields other than competitive sports. Also, most of the studies have been cross-sectional, which are not suitable for verifying causal relationships. In the present study, the aim was to find the role of goal orientation and perceived competence, as well as interaction of the two, among young competitive track and field athletes. A prospective, longitudinal design was used to determine causal effects over a 3.5 years period among the Finnish athletes of the 15 years-old cohort.

Method

The data collection of this follow-up research project was carried out during the period between May 2002 and November 2005. The participants for the study were Finnish junior level track and field athletes. There were two inclusion criteria: (a) the athlete was born in 1987, and (b) the athlete had a valid competition license from the Finnish Athletic Federation (FA). A total of 1,747 youth athletes (904 females, 843 males) met the inclusion criteria. At the time of the initial data collection, the participants ranged in age between 14 and 15 years (mean \pm S.D: age 14.9 ± 0.3 years).

The data was collected using a multi-section survey questionnaire that was mailed to all the FA licensed athletes born in 1987. A cover letter was included providing instructions for completing and returning the survey. In this letter, the participants were informed that participation in this study would involve completing a questionnaire once a year during the following 3.5-year period. The time required to complete the form was estimated to be less than 30 minutes. The participants were reminded that there would be no direct benefits to them for their participation in this study. The participa-

tion was ensured to be completely voluntary, and the participants were offered the option to withdraw from the study at any time without any negative repercussions.

Given that the purpose of the study was to re-contact the respondents for follow-up information, they were asked to provide their names and addresses on the completed survey forms. To avoid production of socially acceptable and dishonest answers, confidentiality procedures were carefully explained and guaranteed through a written specification of the respondent's level of confidentiality. The cover letter also included pre-addressed postage-paid envelopes to make it easy for respondents to return their surveys.

The first section of the survey included items describing the population in terms of demographics and athletic experience. The second section of the survey gathered information about the participants' goal orientation strategies and perceived competence.

Goal orientation in competitive sport domain was assessed using the Finnish version of the Perception of Success Questionnaire or POSQ (LIUKKONEN, 1998; ROBERTS et al., 1998). In the POSQ the respondent is asked to indicate the most preferred alternatives responding on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale consists of task and ego orientation subscales, with six items on both. The stem for each item is: "When I am doing sports, I feel most successful when ...". The task orientation subscale consists of items that place emphasis on effort, self-improvement, and learning a task (e.g. "I try hard", "I really improve", "I succeed at something I couldn't do before"). The Cronbach alfa reliability coefficient of the scale was .77. The ego orientation subscale consists of items emphasizing superior ability and being better than others (e.g. "I beat other people", "I accomplish something others cannot do"). The Cronbach alfa reliability coefficient of the scale was .89. The perceived competence (PC) index was based on

one item aimed at tapping the athlete's evaluation of his or her own competence compared to that of other track and field athletes of the same age. The PC item elicited scores on domain-specific perceptions of competence through the stem "Compared to other athletes of my age and sport, my skill level is ...". The item was answered on a 5-point Likert scale ranging from 1 (clearly below the average) to 5 (clearly above the average). For the data analyses, the scale was dichotomised by combining first three categories as Low PC, indicating that the respondent perceived his or her competence as average or lower than average, and the last two categories were combined as High PC, indicating that the respondent considered himself or herself as an above average athlete.

A valid competition license of the Finnish athletics federation (FA) was used as the indicator of persistence in competitive track and field 3.5 years after the initial survey questionnaire. That was in 2005, when the participants were at the age of 18. In order to describe the development of withdrawal, the license data were also collected for the years 2003 and 2004.

A reminder letter with an additional copy of the survey was sent to the recipients who had not replied two weeks after the initial mailing of the survey. A total of 802 athletes responded to the questionnaire. The overall response rate to the survey was forty-six percent. The response rate was 50% for girls and 42% for boys.

Results

Termination of sport participation

Of all those who had a competition licence at the age of 15, only 23.9 per cent continued active competition three years later at the age of 18. For girls the percentage was 22.0 and for boys 25.9. As can be seen in the Figure 1, the decrease in participation was highest between age years 15 and 16, and the decrease was higher for girls than for boys.

The athletes had first joined sports clubs quite young, typically in the age of eight years

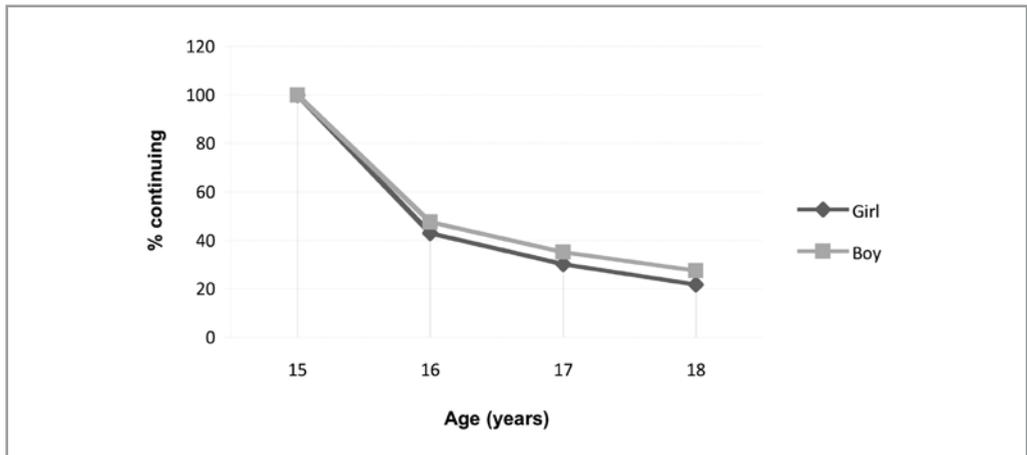


Figure 1: Change in the proportion of licensed track and field athletes in Finland over the age range 15 to 18

(median value) and only 10% joined a club later than the age of 12. Those who had tried athletics only a year or two could not be the cause of the high dropout rate between age 15 and 16. A more likely explanation is transferring from secondary school to academic or vocational line in upper secondary school.

Dependencies between gender, goal orientation and perceived competence

Gender, goal orientation and perceived competence were used as the predictors of persistence, but the associations between these traits also illuminate the characteristics of young athletes. Task orientation and ego orientation were relatively independent of each other ($r = .09$), as proposed by NICHOLLS (1989) and verified in subsequent studies (CHI & DUDA, 1995; ROBERTS et al., 1996). The result was also a prerequisite for using profiles or interactions of task and ego orientation in predicting persistence.

It could be expected that those who find their achievements inferior to others define success in sports differently from those who consider themselves competent. Our data did not support this expectation. The correlations of perceived competence with task orientation and ego orientation were low, $.05$ (n.s.) and $.15$

($p = .000$), respectively. The correlations were of the same magnitude as those BIDDLE et al. (2003) found in their meta-analysis of 29 previous studies. The result implies that athlete's subjective perception of the attained success does not depend on goal orientation, i.e. on how he or she considers as a success.

Gender was related to ego orientation but not to task orientation. Boys defined success in sports more often than girls in terms of beating others and being better than others. However, gender difference was not strong, point-biserial correlation between gender and Ego orientation was $.15$ ($p = .000$). Gender was also related to perceived competence (CHI square = 6.252, $df = 1$, $p = .012$). Girls rated themselves more often as above average than boys, but the difference was small (Contingency coefficient = $.06$).

Goal orientation, perceived competence and persistence

Forward stepwise logistic regression with an LR test for removing variables was used to predict persistence in competitive sports three years after the first measurements. The dependent variable consisted of two values, one for those who had valid competition licence in 2005 and zero for the others, i.e. for those who

had totally quit active athletics competition between the years 2002 and 2005. The dependent variable was predicted by task orientation, ego orientation, perceived competence, gender, and by their two-way interactions.

The fit of the final regression model (Table 1) was statistically significant (Chi square = 106.244, df = 3, p = .000). In addition to the constant, it consisted of task orientation main effect, perceived competence main effect and gender by task orientation interaction. With the model, persistence could be predicted correctly for 70.1% of the participants. With the regression equation both quitting and persistence could be predicted, but the prediction for quitting was to some extent more accurate (73.4%) than prediction of continuing competitive sports (62.6%).

It is interesting to note, which variables did not predict persistence. Ego orientation alone or via its interactions was not related to persistence. The lack of task orientation by ego orientation interaction indicated that the data did not lend support for the profile hypothesis, in which the dominance of one orientation over the other is assumed to predict persistence. The intercorrelations between the predictor variables were low and the result could not be due just to multicollinearity.

Also, there was not any statistically significant gender by perceived competence interaction indicating that lack of perceived

competence was linked with decision to quit competitive sports among both boys and girls. The lack of task orientation by perceived competence interaction indicated that the effects of task orientation and perceived competence on the termination of competitive sports are cumulative, i.e. affect the termination independent of each other.

Logistic regression lines for the statistically significant effects are shown in Figure 2. Lines cover the whole range of possible task orientation scores, but the scores of the participants of the present study ranged from 10 to 30 and 95% of scores fell on the range from 20 to 30 points. Even over the range where most of the cases fell, the predicted probability of continuing for Task orientation score 30 was, depending on the group, .16 to .26 greater than for score 20.

In addition to the task orientation, probability for continuing competitive sports depended on the perceived competence and gender. From the Figure 2 it can be seen, that for persons considering themselves as better than average young athletes, the probability for continuing was .25 to .32 greater than for persons perceiving themselves as average at best. Gender modified to some extent the predictive power of task orientation. With the same task orientation score, a boy was more likely to continue competitive sports than a girl, indicating that other factors had greater effects among girls than boys.

Table 1: Final logistic regression model for predicting persistence in young Finnish athletes

Variable	B	S.E.	Wald	df	p
Task orientation (TO)	0.102	0.027	14.921	1	0.000
Perceived competence	-1.351	0.162	69.912	1	0.000
Gender by TO	-0.017	0.006	7.285	1	0.007
Constant	-3.001	0.687	19.081	1	0.000

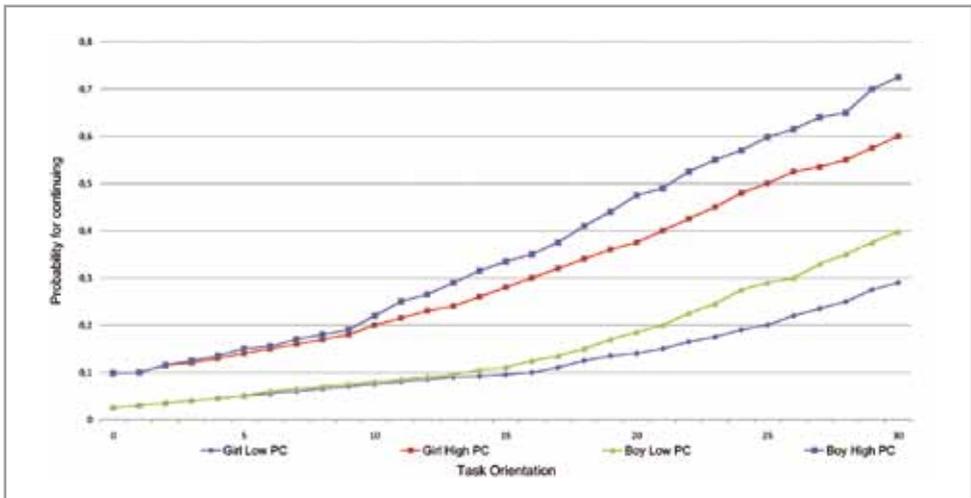


Figure 2: Probability for continuing competitive track and field as the function of task orientation among perceived competence groups of young male and female Finnish athletes

Persistence and participation in the study

In the first survey in 2002, 45.9 per cent of those who had valid competition licence responded to the questionnaire. Response rate is usually considered as a potential source of bias in the results. In the present case, response rate revealed an interesting phenomenon relating to persistence. Response rate turned out to predict the number of years the participant was going to hold a licence. Among those who did not apply for a licence a year later, the response rate was 26.9 per cent, whereas those still continuing competitive sports three years later, response rate was 71.4 per cent. Response rate increased with the number of years of continuing competitive sports.

In the cover letter, the participants were informed that participation in the study would involve completing a questionnaire once a year during the follow-up period. However, participation in the study was not a prerequisite for a competition licence. In their decision to participate in the follow-up study, young athletes transmitted, consciously or subconsciously, their commitment to competitive sports. It is noteworthy that participation in the study is

even related to the degree of commitment, i.e. the number of years in the future that a person will continue competitive sports.

Participation in the follow-up study was also related to task orientation, but not to ego orientation. Respondents were divided into four persistence groups on the basis of how many years after the first mail survey they held licences (one, two, three years, and continuing after the third year). In one-way ANOVA task orientation means differed statistically significantly between the persistence groups ($F = 7.971$, $df = 3$; 715 , $p = .000$), but for the ego orientation the differences were not statistically significant.

It could be presumed that, for example, among those who quit competitive sports one year later, those who did not participate in the study had obtained similar scores in task orientation to those who participated in the study. Assuming the presumption correct, it could be concluded that participation in the study was related to task orientation lending evidence of the construct validity of the task orientation scale.

Discussion

Once a young athlete has decided to participate in an organised competitive sport, the next question in terms of motivation is what keeps him or her in the sport, even in the face of obstacles? As important as understanding why youth athletes participate in sports is understanding why they terminate their participation. These issues are of importance, not just because the withdrawal process may influence adolescents' attitudes to competitive sports, but also because it can have a negative influence on physical activity and thereby their future life-style and health behaviour. The present study addressed these essential aspects of organised youth sports in a longitudinal study of persistence focusing upon competitive track and field athletes.

With regards to the estimates of attrition rates, the results of the present study were in line with the earlier findings on withdrawal from youth sports. It was found that seventy-six per cent of all the Finnish track and field athletes born in 1987 terminated their participation in competitive sports within the 3.5-year follow-up period (2002-05). A positive deviation from our expectations was that the attrition rate among girls was only four percentage units higher than among boys. The figures appear to be somewhat higher than the ones reported by GOULD & PETLICHKOFF (1988), but statistics concerning the whole age cohorts from different countries would be needed for more accurate generalisations. The attrition rate in the present study, however, was alarmingly high, challenging the way youth athletics is organised and conducted in Finland.

The young athletes in the present study had participated in organised athletics activities within sports clubs on average for 8 years. Holding a competition license at the age of 15 reflected relatively persistent involvement, and the license was not purchased just for occasional participation in competition. Quitting competitive athletics must have been an important turn of events as it meant the end of an activity to which sus-

tainable efforts and time had been invested over several years. Any means to anticipate the event would help to make sure that the athlete has thought through the decision. This was the aim of the present study.

The main result was that young athlete's task orientation and perceived competence at the age of 15 years predicted athlete's persistence in competitive sports three and half years later, and that the prediction was correct in 70.1% of cases. The results of the present study confirm the results from PAPAIONNOU et al. (2006) longitudinal study and give additional support for the view that task orientation and perceived competence are directly related to persistence, and that ego orientation does not seem to play any role in predicting persistence, either directly or through interactions with task orientation or perceived competence. In addition, gender was found to moderate the effect of task orientation in the way that task orientation was more closely related to persistence among boys than among girls, but perceived competence predicted persistence in the same way among male and female athletes.

The importance of the finding is in demonstrating the role of task orientation and perceived competence as keys for understanding persistence in competitive sports. From the theoretical point of view, the results support the fruitfulness of the AGT as a framework to analyse the motivation of young athletes, even though there is much in the details that need further longitudinal prospective research. The results of the present study indicated that even among competitive sports, ego orientation as dispositional trait had no relation to persistence. However, it is possible that the goal of beating others in a competition, i.e. ego orientation as a state may have effects on athlete's behaviour in specific situations.

From the practical point of view, the results point to possibilities to increase persistence in competitive sports. It is not suggested that task orientation and perceived competence could be used for selecting future champions. The

prediction is still far from perfect and if using it mechanically, probably many future champions would be lost and many more would be chased away from sports practice.

The results of the present study demonstrate that the type of goal setting is important for the development of a young athlete. If he or she learns to set goals for the sports career, he or she has gained one essential prerequisite for the development towards becoming a champion and for persisting in competitive sports. The challenge for sports clubs and coaches is to invent developmental tasks, activities, and training and learning contracts, which foster young athlete's view of success and competence. Goal orientation questionnaire could be used in opening discussion on these matters, but even more important are probably the discussions about the goals and success, and about their development in the long run.

One cue of the potential activities in developing young athlete's thinking might be obtained from the result related to the willingness to participate in the present study. The result suggests that those who are at risk of quitting competitive sports may not be willing to discuss their personal views related to goal setting and success. Perhaps, more time should be spent in exploring young athletes' thoughts about these matters. The results related to the participation also indicated that those in danger of quitting competitive sports hesitate in involving themselves even in such a long-term project as filling a questionnaire once a year over several years. It could be assumed that offering opportunities to join in long-term projects, either related to the athlete or to the athletic club, would help in clarifying goal setting.

Task orientation and perceived competence tended to affect an athlete's behaviour three and half years later. The long time span in prediction implies that any changes in task orientation and perceived competence may have effects on athlete's behaviour even years afterwards. Depending on the experiences that sports activities give the athlete, the effect may be in the positive or negative direction. The result should be seen as encouraging the design of interventions aimed at increasing task orientation and perceived competence, since their effects would probably extend over several years.

In the present study, the main focus was directed to persistence in competitive athletics. It is important that a young athlete's decision to withdraw from competitive sports can be supported in such a way that he or she does not need to leave with the feelings of failure. After all, professional sports such as athletics also need persons are familiar and have a positive attitude towards them. Without officials, active individuals in sport clubs, and spectators at sports events and media audiences there would not be any world-class sports and or sports culture.

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