

# THE IMPORTANCE OF PERSONAL SKILLS AS THE BASIS FOR A SUCCESSFUL DUAL CAREER AT ELITE SPORTS SCHOOLS

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## Abstract

**Objectives:** Early promotion of self-regulation skills is crucial for the successful career development of young talents at an elite sports school, as these skills are fundamentally developed in childhood. It can be assumed that the ability to perceive high stress levels as anything other than a negative burden depends on how well self-competence skills are developed. As the intensity and extent of stress in competitive sports cannot be altered at will, but rather depends on the demands of the sport in question, tolerance of stress must be trained. Previous studies have shown that top athletes in particular are able to perceive high levels of stress as a positive challenge, whereas athletes of the same age and talent perceive the same conditions as stressful (Schröder, 2025). These results should provide insights into how young athletes can be coached more effectively to prepare them for new stress challenges. **Methods:** A total of 58 pupils, aged between 10 and 13 years old (mean age = 11.67 years; SD = 1.44 years), were surveyed about their self-competence using the SSI-K3 (Kuhl & Fuhrmann, 2004) at three different time points. The pupils were surveyed before, immediately after, and one year after entering an elite sports school, in order to link any changes in skills to different phases of their school career. As it was not feasible to survey all pupils at each time point during the period under consideration, the present study is divided into three distinct segments. Firstly, a cross-sectional study at t3 is conducted. Secondly, a two-paired group comparison is made from t1 to t2 and t2 to t3. Thirdly, a longitudinal comparison was conducted from t1 to t3. **Results:** The SSI-K3 demonstrates good validity ( $\alpha = .795$ ), thus confirming the results previously reported by Kuhl and Fuhrmann (2004,  $\alpha = .73-.90$ ). The first analysis of the cross-sectional results at t3 already showed that a noticeable but not significant decrease in self-efficacy could be observed at t2, whereas at the same time the threat items increased ( $p = .069$ , partial  $\eta^2 = .041$ ). The subsequent longitudinal studies at two time also demonstrated these trends, with a significant change observed for threat from t2 to t3 ( $p = .019$ ,  $d = .621$ ). The longitudinal study demonstrated analogous trends; however, these were not statistically significant ( $p = .089$ , partial  $\eta^2 = .080$ ). **Conclusion:** The results show that changes in sport-school conditions influence self-competence. Since career paths vary (Stambulova & Harwood, 2022), they can be adapted individually to reduce stress and increase self-efficacy. For example, giving athletes more say could significantly reduce the negative effects of stress. As stress is a significant factor in premature dropout, reducing it could lead to more successful careers in the dual career system at an elite sports school.

**Keywords:** *Dual career, stress, competitive sport, young athletes, self-competencies.*

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## 1. Introduction

The development of self-regulation skills at the beginning of a sports school career is a key mechanism for a successful dual career. The transition from childhood to adolescence is characterized by neurocognitive maturation processes, particularly in the area of executive functions such as inhibition, working memory, cognitive flexibility, and prospective planning (Dunn, 2022). These functions form the basis of controlled information processing, which becomes increasingly important in adolescence. In the context of athletic transitions, this maturation is crucial, as young athletes increasingly have to make autonomous decisions about training volume, academic priorities, and long-term career goals. The transition from recreational to competitive sports is not a one-off event, but a process involving social comparison and changing self-perceptions. Successful adaptation depends largely on the ability to regulate self-assessments and deal constructively with selection processes (Dunn, 2022), which is the focus of the present study.

Entering a sports school means that performance requirements in school and sports increase simultaneously. Based on dual-process theory, there are individual differences in how young people coordinate these requirements. A Finnish longitudinal study identified three dual-career construction styles:

contrapuntal (balanced), monophonic (school-centred), and dissonant (lacking balance) (Kuokkanen et al., 2025). Particularly relevant is the finding that controlled cognitive processes (conscious planning, goal setting, and decision regulation) become more important with age. While automatic routines are established early on, the ability for strategic self-control only develops during secondary school. Stable contrapuntal styles favour the continuation of dual careers, whereas dissonant patterns are associated with limited decision-making quality and increased developmental risk. Gender-specific differences suggest that girls are more likely to internalize academic prioritization, while deficits in controlled processes are more apparent in boys (Kuokkanen et al., 2025). The aim of the present study is therefore to assess self-regulation skills in order to derive optimized support services.

Peaks in stress typically occur when competitions and exams overlap, as well as when strategic educational decisions are made. A lack of self-regulation skills leads to reactive rather than proactive strategies, missed training sessions, and increasing exhaustion (Kuokkanen, 2022).

## 2. Design

In order to examine the above-mentioned relationships between the changing conditions that arise during the first years at an elite sports school, a longitudinal study was designed to enable the establishment of long-term support services. As part of the support provided by class teachers, coaches, and sports psychologists, appropriate services are to be created that enable the promotion of self-regulation skills. Self-regulation skills are assessed every six months, with the primary aim of highlighting correlations between structural and process-based conditions and self-regulation abilities.

## 3. Objectives

Self-regulation skills help prevent dropout and must be understood as the basis for athletic success. Studies show that reduced self-regulation is negatively correlated with success and also increases stress. The aim is to reduce stress at structural and organizational levels on the one hand, and to promote resilience among athletes on the other. Research on dual career adjustment shows that commitment and burnout are closely intertwined in adolescence. Young people with a high perceived sense of control, clear goal structures, and effective time management strategies have a favourable adjustment profile. In contrast, struggling athletes show increased sports-related exhaustion and an increased risk of dropout (Kuokkanen, 2022). Interestingly, athletic burnout is often more pronounced than academic burnout. The ability to self-regulate—especially prospective planning and prioritization—differentiates adaptive from maladaptive adjustment profiles.

## 4. Methods

A total of 58 pupils aged between 10 and 13 years old (mean age = 11.67 years, SD = 1.44 years) were surveyed about their self-competence using the SSI-K3 (Kuhl & Fuhrmann, 2004) at three different time points. The pupils were surveyed before entering an elite sports school, immediately afterwards, and one year later, in order to link any changes in skills to different phases of their school career. As not all pupils could be surveyed at each time point during this period, the present study is pseudo-longitudinal. Therefore, calculations were based on group differences in independent groups for the main group (N = 58), as determined by analysis of variance (ANOVA) using SPSS 31. To highlight specific differences in individual development, comparisons were also made between the same athletes at two different time points using the paired t-test. Thirty athletes could be observed from t<sub>1</sub> to t<sub>2</sub>, and 43 athletes could be observed from t<sub>2</sub> to t<sub>3</sub>. A group of 30 athletes were observed at all three time points, and the results were calculated using repeated-measures analysis of variance.

## 5. Results

The following table 1 shows the results of the different groups from t<sub>1</sub> to t<sub>3</sub>. The results should give an overview about the most important effects and differences of relevant variables.

Table 1. Descriptive statistics of all participants (N=58), and analysis of variance (ANOVA).

| Variable                      | mean                     |                          |                          | SD                       |                          |                          | F    | p    | partial $\eta^2$ |
|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------|------|------------------|
|                               | t <sub>1</sub><br>(N=30) | t <sub>2</sub><br>(N=43) | t <sub>3</sub><br>(N=58) | t <sub>1</sub><br>(N=30) | t <sub>2</sub><br>(N=43) | t <sub>3</sub><br>(N=58) |      |      |                  |
| <b>Willingness to perform</b> | 1.77                     | 1.62                     | 1.62                     | 0.58                     | 0.45                     | 0.51                     | 1.01 | .367 | .016             |
| <b>Self-access</b>            | 2.04                     | 1.80                     | 1.87                     | 0.58                     | 0.54                     | 0.58                     | 1.52 | .222 | .023             |
| <b>Self-regulation</b>        | 1.75                     | 1.69                     | 1.64                     | 0.48                     | 0.52                     | 0.57                     | .418 | .660 | .007             |
| <b>Self-control</b>           | 1.63                     | 1.47                     | 1.47                     | 0.53                     | 0.37                     | 0.47                     | 1.25 | .290 | .019             |
| <b>Stress</b>                 | 0.93                     | 1.23                     | 1.00                     | 0.72                     | 0.71                     | 0.71                     | 1.85 | .161 | .028             |
| <b>Stress-load</b>            | 0.75                     | 1.08                     | 0.98                     | 0.72                     | 0.76                     | 0.78                     | 1.64 | .198 | .025             |
| <b>Threat</b>                 | 1.11                     | 1.37                     | 1.02                     | 0.82                     | 0.79                     | 0.72                     | 2.72 | .069 | .041             |

Although no significance could be demonstrated, abnormalities are evident in the stress-related items, whose mean values are increased at t<sub>2</sub>. Adjusting the significance for an assumed one-sided hypothesis would result in a significant difference, although the effect size is classified as small ( $p=.035$ ;  $\eta^2=.041$ ).

A correlation analysis of the categories that differ most significantly reveals the correlations shown in Table 2.

Table 2. The following table presents the correlations for all variables of the study.

| Variables           | Self-access | Self-control | Stress | Stress-load | Threat |
|---------------------|-------------|--------------|--------|-------------|--------|
| <b>Self-access</b>  | 1           |              |        |             |        |
| <b>Self-control</b> | .211*       | 1            |        |             |        |
| <b>Stress</b>       | -.669**     | -.217*       | 1      |             |        |
| <b>Stress-load</b>  | -.658**     | -.170        | .924** | 1           |        |
| <b>Threat</b>       | -.581**     | -.231        | .928** | .715**      | 1      |

\*\* The correlation is significant at the .01 level (two-tailed).

\* The correlation is significant at the .05 level (two-tailed).

In the next step, the longitudinal results for t<sub>1</sub>-t<sub>2</sub> and t<sub>2</sub>-t<sub>3</sub> are compared in order to understand the exact developments (see Table 3)

Table 3. Descriptive statistics and paired t-test from t<sub>1</sub> to t<sub>2</sub> and t<sub>2</sub>- t<sub>3</sub> for paired samples.

| Variable                      | mean           |                |                |                | SD             |                |                |                | p    | Cohen's d | p    | Cohen's d |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|-----------|------|-----------|
|                               | t <sub>1</sub> | t <sub>2</sub> | t <sub>2</sub> | t <sub>3</sub> | t <sub>1</sub> | t <sub>2</sub> | t <sub>2</sub> | t <sub>3</sub> |      |           |      |           |
|                               | (N=30)         | (N=43)         | (N=43)         | (N=58)         | (N=30)         | (N=43)         | (N=43)         | (N=58)         |      |           |      |           |
| <b>Willingness to perform</b> | 1.77           | 1.62           | 1.61           | 1.69           | 0.58           | 0.45           | 0.49           | 0.54           | .213 | 0.30      | .534 | -.161     |
| <b>Self-access</b>            | 2.04           | 1.80           | 1.79           | 1.86           | 0.58           | 0.54           | 0.59           | 0.59           | .085 | 0.42      | .645 | .134      |
| <b>Self-regulation</b>        | 1.75           | 1.69           | 1.73           | 1.73           | 0.47           | 0.52           | 0.58           | 0.52           | .60  | 0.13      | .977 | -.008     |
| <b>Self-control</b>           | 1.63           | 1.47           | 1.50           | 1.45           | 0.53           | 0.37           | 0.36           | 0.47           | .157 | 0.34      | .605 | .134      |
| <b>Stress</b>                 | 0.93           | 1.23           | 1.28           | 0.94           | 0.72           | 0.71           | 0.76           | 0.71           | .090 | -0.41     | .078 | .464      |
| <b>Stress-load</b>            | 0.75           | 1.08           | 1.14           | 0.96           | 0.72           | 0.76           | 0.78           | 0.79           | .072 | -0.44     | .372 | .232      |
| <b>Threat</b>                 | 1.11           | 1.37           | 1.41           | 0.93           | 0.82           | 0.79           | 0.86           | 0.72           | .186 | -0.32     | .019 | .621      |

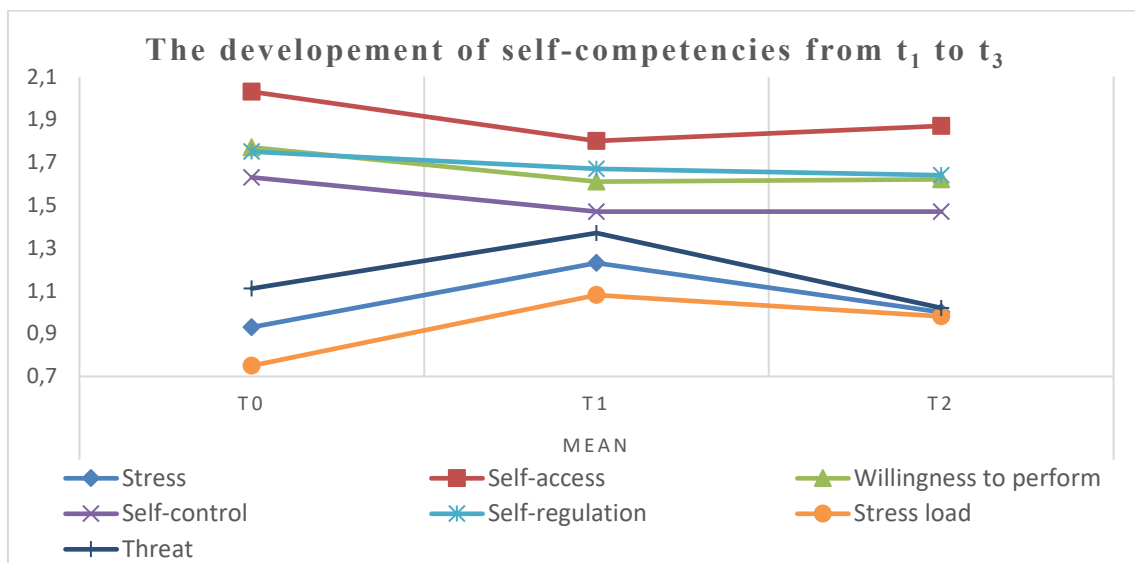
The results presented in Table 3 show significant results with large effects for the threat-related items ( $p=.019$ ,  $d=.62$ ).

Table 4. Descriptive statistics of all 3-time-participants (N=30), and repeated measurement analysis of variance.

| Variable                  | mean           |                |                | SD             |                |                | F    | p    | partial<br>η <sup>2</sup> |
|---------------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|------|---------------------------|
|                           | t <sub>1</sub> | t <sub>2</sub> | t <sub>3</sub> | t <sub>1</sub> | t <sub>2</sub> | t <sub>3</sub> |      |      |                           |
|                           | N=30           |                |                | N=30           |                |                |      |      |                           |
| Willingness<br>to perform | 1.76           | 1.61           | 1.69           | 0.54           | 0.49           | 0.57           | 0.57 | .569 | .019                      |
| Self-access               | 2.03           | 1.79           | 1.86           | 0.57           | 0.59           | 0.57           | 1.24 | .297 | .041                      |
| Self-<br>regulation       | 1.76           | 1.72           | 1.73           | 0.52           | 0.57           | 0.47           | 0.04 | .96  | .001                      |
| Self-control              | 1.64           | 1.50           | 1.45           | 0.47           | 0.36           | 0.53           | 1.27 | .287 | .042                      |
| Stress                    | 0.96           | 1.28           | 0.90           | 0.71           | 0.76           | 0.72           | 1.87 | .163 | .061                      |
| Stress-load               | 0.78           | 1.14           | 0.96           | 0.73           | 0.78           | 0.79           | 1.56 | .22  | .051                      |
| Threat                    | 1.13           | 1.41           | 0.92           | 0.81           | 0.86           | 0.72           | 2.52 | .089 | .080                      |

The results of the longitudinal study (see Table 4) illustrate the correlations between increasing stress and reduced self-competence, with self-access and willingness to perform in particular decreasing as stress levels rise (see Figure 1).

Figure 1. A repeated-measures analysis of variance (3 measurement points) of all variables of the study.



## 6. Discussion

The sport- or school-related burnout symptoms described by Kuokkanen (2022), which are already apparent at the beginning of a sports school career, were confirmed by the present study. Sorkkila (2018) refers to the so-called spillover effect, which states that school exhaustion predicts later sports exhaustion, but not vice versa. According to this, school acts as the primary source of generalised exhaustion, which highlights the enormous importance of school in the context of an optimised school and sports career.

In performance-oriented youth football, the relevance of psychosocial skills is repeatedly identified as a predictor of career progress. According to Barraclough et al. (2025), coaches play a key role but require targeted further training. Therefore, dual sports career support programmes should also train coaches and teachers. Early intervention with athletes appears to be particularly relevant, as self-regulation patterns are consolidated in early stages of development. This is also evident in the present results, as the self-access and willingness to perform-related items develop negatively with increased stress. In addition to individual factors, environmental conditions have a significant influence on the development of self-regulation skills (O'Hara, 2020), which allows conclusions to be drawn about school organisation. In socio-economically disadvantaged contexts, special sports programmes have a stabilising effect on

self-esteem, social skills and resilience. Although sports-related physical self-perception declines due to intensified social comparison processes, overall self-esteem remains stable. School performance does not deteriorate; in some cases, it even improves. The importance of special sports promotion programmes thus supports structuring contexts and promotes motivation to attend school. Such programmes can have a protective function, especially for young people with increased structural risk (O'Hara, 2020).

## 7. Conclusion

Protective factors include intrinsic motivation, mastery-oriented goal structures, self-esteem and adaptability in the sense of flexible self-regulation. Risk factors include perfectionist tendencies, unbalanced focus and a lack of recovery time. These findings underscore that self-regulation is not only performance-related but also relevant to health (Sorkkila, 2018).

It therefore requires support for athletes that creates transparent structures and thus offers support services to reduce anxiety on the one hand and promote self-regulatory skills through clear processes on the other. The concept of role strain provides a differentiated perspective on psychosocial stress. Young competitive athletes fulfil multiple roles – student, athlete, friend, family member – whose cumulative demands can lead to overload, conflict or underload (Van Rens, 2015). Lack of time proves to be a key stress factor. While academic overload primarily draws on cognitive resources, athletic overload exhausts physical resources. Both forms are negatively associated with life satisfaction. The task of optimised school support during a dual career must be understood, among other things, as optimising time resources and relieving the athletes in this regard. In addition, consistent goal congruence must be ensured through goal-setting discussions. The sharp reduction in self-access from t1 to t2 is an indication that goals change due to changing conditions, with reality possibly deviating from the athletes' expectations. The risk of premature dropouts could be mitigated through goal-setting discussions and resilience training.

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