The SUPER project – an Educational Turn towards a more SUstainable PERformance Development within Performing Arts and Aesthetic sports

Abstract: The SUPER project is an interdisciplinary and comparative research project positioned in performance science and the educational context of talent identification and development systems (TIDS) within performing arts and aesthetic sports. Human capital is proposed to represent one of the most important investments for future innovation and societal growth, and the cultural sector has shown to contribute to national identity, quality of life and health for the general population. Sustainable performance development in the performing arts and aesthetic sports is a prerequisite to ensure quality performance, maintenance, and growth in the Norwegian cultural sector. However, alarm bells are ringing as the hazardous trademark of the elite performance culture has been found to be unsustainable and unhealthy. Research has stressed that participation in the educational setting of TIDS, which often comes at the expense of personal development and well-being, are echoing the professional culture. Hence, there is need for an educational turn. The TIDS in Norway are popular and has a wide range of participants as they are set both in the formal educational system (e.g., specialized high schools, public municipal schools, and higher education) and settings outside schools like sport clubs, private leisure activities, and national teams. The impact in a long-term perspective is vital as new students continuously will come and go, while the educational systems remain. Contrary to research-based pedagogical practices often observed in public schools and general cultural leisure activities, TIDS are grounded in highly experienced-based, often hierarchical, apprenticeship cultures. As such, students seem to be exposed to professionalized and intensive training practices, which undermine health, well-being, and performance development. To create a more sustainable performance development and, in turn, long-termed growth in the cultural sector, research-based interventions that facilitate sustainable performance development are urgently needed.

1. Excellence

1.1 State of the art, knowledge needs and project objectives

1.1.1 The current situation for pre-professional and professional performers: alarm bells are ringing

> *Alarm bells are ringing because the total load on elite athletes is too high. Many factors contribute to the total load … Some athletes may handle it, but for the rest of us, being the best comes with a high price tag. There is no easy solution—athletes, coaches, and managers will not lower their ambitions. We in the elite sports community cannot wait until athletes start complaining, because elite athletes do not complain. We proudly push our bodies beyond their limits. This is our trademark* [1].

The hazardous trademark of the elite performance culture, where the pre-professional and professional performers seem to continuously push their physical and mental boundaries to enhance performance, are likely an unsustainable pathway in the long run [2-4]. In fact, existing literature presents a paradox in terms of health, well-being, and quality of life among performers; while amateurs generally experience many benefits from participation, the price tag related to participation for pre-professional and professional performers is often too high [5-8]. For performing arts and aesthetic sports performers, physical and mental health issues are often interrelated and associated with social environmental stressors that are culturally embedded [8-10]. For instance, about 45% of dancers suffer from at least one mental health issue per year, and 30% reported a mental health issue as their most severe health problem [8]. Similar patterns are found in musicians who reported between 20-32% of mental health symptoms yearly, which was higher than the average population [11]. The prevalence of physical health issues among elite athletes, musicians, and dancers is similarly substantial [4, 12, 13]. As many as 1/3 of younger (< 30 yrs) and 2/3 of older (> 50 yrs) musicians reported that health-impairing challenges caused by physical overload negatively affected their performance [12]. Regarding dancers, epidemiological studies indicate very high injury prevalence in pre-professional (76%) and professional dancers (60–69% [13, 14]). For professional athletes, the weekly health burden has been proved to 36%, leading to moderate or severe reduction of participation or performance if substantial, [4]. The situation seems to be even worse among youth elite athletes attending specialized high schools, who reported 43% of weekly health problems [15]. Overall, stressors, mental issues, and pain seem to be everyday epiphenomena of the elite performers [8, 13, 16].

Yet, these performing artists and athletes seem to lack basic knowledge about well-known injury- and illness prevention, as well as coping and recovery strategies including mental health training [11, 17, 18].

The unhealthy attitudes promoting a 'no pain no gain' myth, which contribute to undermine performers' sustainability, are claimed to result from the performance-oriented cultures in performing arts and aesthetic sports, internalized from childhood years [19-21]. Research shows that elite performers seem to adapt and accept social environmental structures, as their focus is on performance results rather than caring for their own health [2, 10]. The specific TIDS are manifested in educational cultures that set pedagogical and structural conditions of deliberate (i.e., systematic and intentional) practice [22, 23]. Research shows that the culture runs deep in these traditions, and that they share numerous educational features [2, 22, 23]. In a recent scoping review on teaching and learning in dance [23], a key finding was that the culture constituted leaders', teachers', and students' beliefs systems, structures, power relations, ethics, aesthetics, and behavior. Specifically, the TIDS in performing arts and aesthetic sports are based in the apprenticeship-learning tradition, which reflect an experience-based and partly tacit learning tradition [22, 24, 25]. These TIDS are traditionally considered to involve early specialization, asymmetric power relations, and formal top-down delivered learning methods [26-28]. As such, scholars have repeatedly stated the need for an educational turn towards more student-centered teaching and learning [23, 29, 30].

1.1.2 A sustainable performance development

In contrast to some common beliefs and perhaps cultural 'myths' that 'trauma makes talent' and that elite performance cannot be sustainable [31], scholars have reasoned that better caretaking of young athletes, dancers, and musicians will nurture more thriving elite performers [2, 19, 32, 33]. This is important both from an ethical perspective (e.g., preventing illness in children), but also to reach national goals of educating Norwegian top performers who can pursue long-lasting professional careers. As an underpinning premise, the SUPER project is based on the postulation that personal development and performance development must co-exist and require each other [32, 34]. Research has demonstrated that it is possible to gain both objectives, while they perform at the highest levels [2, 34].

Sustainable performance development aligns with the holistic and research-based view on talent development [32]. Sustainability in elite performance contexts is about balancing the scale of workload and total stress relative to capabilities, recovery, and overall life quality [35]. Thriving is proposed to be a likely outcome of a sustainable performance development and the very indication of a sustainable performer who prospers [35]. It portrays intrinsic motivation, agency, and realization of inner potential, associated with higher levels of overall functioning and well-being [35, 36]. A core question in performance science is why some individuals thrive, whereas others merely survive or surrender. Resilience is proposed to be a key factor to explain this difference [37, 38]. Resilience refers to a personal protective robustness alongside a reactive rebound quality when under stress and pressure (i.e., self-awareness, flexibility, and agency), and is positively associated with positive functioning, well-being, and continuous quality performance [37]. Hence, resilience is a response to stress with a challenge appraisal that focuses on gain, in contrast to a response to stress as a threat appraisal that entails minimalization of loss [37]. Resilience and, in turn, thriving are fostered by targeting both personal and social environmental factors [37, 38]. However, adaptive appraisal, coping- and recovery capabilities are not very well developed in performing arts and aesthetic sports performers [37, 39]. Neither are these important abilities always adequately addressed or prioritized in TIDS within performing arts and aesthetic sports [16, 38].

1.1.3 Research on talent identification and development systems (TIDS)

Talent development is a multidimensional, emergent, and situated phenomenon in which different individual, social environmental, and situational elements interact and are set in play [22, 40-42]. It is the complex interaction of biological (physiological and medical), psychological, and social environmental (educational and sociological) aspects- *biopsychosocial,* that is at the core of the SUPER project. As such, talent has some innate personal components, which develop in interaction with the social environment [41]. Research from both sports and performing arts demonstrates that successful performers share many of the same personal and psychological characteristics (i.e., conscientiousness, intrinsic motivation, and resilience) compared to less-successful performers [36, 43]. However, as many as 25-30% of elite performers demonstrate personal vulnerabilities, such as perfectionism, controlled motivation, and anxiety, which impair performance development [44]. Clearly, elite performers vary in their degree of

resilience, underpinning diverse ways of perceiving and coping with stressors [17, 36, 44]. Social environmental factors like educational quality and learning environment vary across setting and development phases, likely inducing students' learning and development in different ways [20, 22, 25, 29].

Systematic reviews have highlighted that the quality of talent development research is generally inadequate and that practitioners lack clear, relevant, and evidence-based recommendations [45, 46]. Thus, scholars emphasize the need for greater diversity in both research designs and methods used when researching talent development [45, 46]. For instance, researchers are criticized of focusing too much on unidimensional quantitative approaches to talent out of line with the complex nature of the studied phenomena [46]. Furthermore, there seems to be a need for qualitative research that investigate the way TIDS, as educational practices, are culturally embedded. Research designs taking a mixed-methods approach, combing diverse research questions, data, analysis, and interferences, might bridge several of these methodological shortcomings and fulfil future objectives [42, 47].

1.1.4 Overall research aim

Based on the urgent need for an educational turn towards more sustainable performance development, the overall research aim of the SUPER project is *to develop an intervention that promotes sustainable performance development that not only demonstrates research quality, but also is applicable, efficient, and cost-effective.* The purpose is to be achieved by using a sequential multiphase mixed-methods research design based on the multiphase optimization strategy (MOST [48]).

1.2 Research questions and hypotheses, theoretical approach, and methodology

1.2.1 The multiphase optimization strategy (MOST) framework

The SUPER project provides an evidence-based and rigorous approach to the development of more sustainable performance development. We have built the project's work-packages on the MOST framework [48], which propose a new strategy for optimizing social-behavioral interventions in complex areas such as TIDS. To be perceived as useful to the TIDS, the SUPER intervention must be efficient, economical, and applicable. By applicable we mean based on trustworthiness and legitimacy in the real-world educational settings [48]. For numerous reasons it is difficult to harvest such an intervention by conducting research that depend solely on a single randomized controlled trial (RCT). A RCT tests the intervention-package as a whole, and hence, does not provide information about the specific components or their interaction effects [48]. Therefore, the MOST method contains of three phases: preparation, optimization, and evaluation, in which the last phase comprises an RCT. In the optimizing phase, exclusively in the MOST, detailed information about each intervention component is explored and piloted to ensure that the final conceptual intervention model meets specific a priori optimization criteria [48].

1.2.3 The SUPER work-packages, aims, research questions, and actions

The research of the SUPER project will be carried out by an interdisciplinary project group of nine experienced researchers, a post doc fellow, two PhD candidates, and three external expert partners. We will also recruit master's students to support with data collections (WP1-3). The development and evaluation of the SUPER intervention (see Table 1) will be conducted by the post-doctoral fellow in collaboration with the overall research group and master students. The optimizing phase (WP2) will be supported by two PhD projects. PhD project 1 aim to focus on the role of the performance culture and explore, identify, and develop research-based knowledge related to belief-systems, knowledge, and structures of key stakeholders within the TIDS. PhD project 2 will focus on the biopsychosocial perspective in performers' experiences, and explore, identify, and develop research-based knowledge on resilience and thriving in performers. Together, the two PhD projects will contribute novel knowledge on sustainable performance development (RQ 3-4) and assist the optimizing (RQ 5) of the overall SUPER intervention to be tested and evaluated within a RCT design in relevant Norwegian TIDS (WP3). To make realistic implementation of the two PhD projects, they will depart from and focus on each main methodological position (PhD 1; sociocultural perspective, qualitative case-studies, PhD 2; biopsychosocial perspectives, mainly quantitative research; see 1.2.4 for details). As the project is emergent with one WP building on results from the previous one, the overall work-package model (see Table 1) will function as a process document that will be further elaborated, developed, and clarified as the research progresses.

Table 1: *Overall work-packages model*

Work package	Aim(s)	Research question(s)	Actions	Team	Period
1. Prepare & Involve	A1: To identify key stressors and health problems that are threats to the fulfillment of a sustainable performance development A2: To review prior relevant intervention programs and develop the SUPER intervention protocol by using the MOST phase of prepare and the RE-AIM[1] intervention science framework to ensure a rigorous intervention	RQ1: What are the key stressors, and the prevalence of mental and physical health problems of Norwegian pre-professional and professional dancers, musicians, and aesthetic sport performers? RQ2: What are the specific MOST optimizing criteria and the RE-AIM protocol specifics for enhancing sustainability in design, planning, and evaluation of the SUPER intervention?	1. Project planning to ensure sound and efficient organization 2. Project planning to ensure research of high quality 3. Ensure recruitment of, involvement, and project relevance to stakeholders, partners, and participants 4. Conduct study 1 and fulfill RQ 1 5. Fulfill review process, protocol development, and RQ 2	Project team (actions 1 -5) Research partners (actions 2, 4 -5) Post Doc (actions 2, 4-5) Reference group (actions 3, 5) Team PhD Candidate 1 & 2 (actions 1 -3)	Spring 2023- Autumn 2023 (1 year duration)
2. Explore, Pilot & Optimize	A3: To identify the key biopsychosocial factors positively and negatively associated with a sustainable performance development and investigate their interrelations and changes through different development phases A4: To explore, pilot and optimize the intervention components integrating research-based and experience-based knowledge and perspectives to target different stakeholders	RQ3: What characterize the performance culture within music, dance, and aesthetic sport in different talent development phases, and how do they relate to a sustainable performance development? RQ4: a) What is the specific role and interrelations of biopsychosocial aspects in pre-professional and professional performing arts and aesthetic sport performers' process of becoming elite performers, and b) which personal or social environmental factors attenuate the effects of key stressors and enable a sustainable performance development? RQ5: What are the core intervention component to target a) attitudes, knowledge, structures, and behavior of key stakeholders in the TIDS environments, and b) sustainable performance development in performers	1. Carry out PhD project 1 – 'Sustainable performance culture' and fulfill RQ 3 and 5a 2. Carry out PhD project 2- 'the sustainable performer' and fulfill RQ 4 and 5b 3. Explore and optimize a conceptual model through the MOST (multiphase optimization strategy) intervention development and fulfil RQ 5a and RQ 5b 4. Dissemination, communication, and engagement activities	Project Team (actions 1 -4) Research Partners (actions 3-5) Team PhD candidate 1 (actions 1, 3-4) Team PhD candidate 2 (actions 2- 4) Team Post Doc (actions 3-4) Reference group (action 3)	Spring 2024- Autumn 2025 (2 years duration)
3. Evaluate	A5: To develop and evaluate in an RCT a high quality and relevant intervention program to promote sustainable performance development in pre-professional performers	RQ6: How can we arrive at an intervention program that promote sustainable performance development in pre-professional performers that not only demonstrates research quality but also is efficient, applicable, and cost-effective?	1. Carry out and evaluate the RTC intervention study 2. Fulfil RQ6 3. Dissemination, communication, and engagement activities 4. Project evaluation and report	Project Team (actions 1-3) Research Partners (actions 2-3) Team Post Doc (actions 1 -3) Reference group (actions 1-3) Team PhD candidates (3-4)	Autumn 2025- Autumn 2026 (1,5 years duration)

[1] RE-AIM is a framework to guide the planning and evaluation of programs according to the 5 key RE-AIM outcomes: Reach, Effectiveness, Adoption, Implementation, and Maintenance (re-aim.org). It is one of the most commonly applied frameworks in public health, health behavior, and implementation science (Shelton et al., 2020).

1.2.3 Theoretical framework of the initial conceptual model to explore and optimize within the MOST

The SUPER project focuses on three main areas for the intervention development to counteract key stressors and enhance sustainable performance development (see Figure 1): 1) personal qualities, 2) facilitative learning environments, and 3) coping- and recovery processes. We will address the main aspects related to the conceptual model as basis for the development of intervention components.

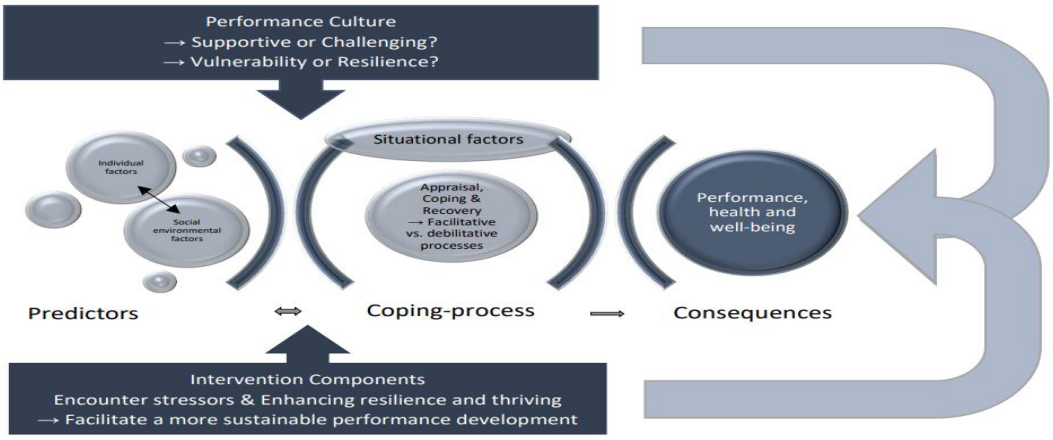

Figure 1: The SUPER conceptual working model of sustainable performance development

Personal qualities. From a biopsychosocial perspective, the importance of the effective interplay of traits, skills, and physical factors cannot be underestimated [41]. Individual stressors (e.g., specialization age, injuries, illness, growth, and maturation) set the backdrop of trials [13, 49-52]. While personal qualities (e.g., personality traits and mental skills) influence how performers perceive, appraise, and cope with their current strivings [38]. For example, certain personality traits, such as perfectionistic tendencies and lack of self-regulation, can be singled out as risk factors of health problems [8, 53]. Recently, perfectionism was found to be highly prevalent (80%) among Norwegian pre-professional performers, especially for the performing arts and female participants [44]. In contrast, personal qualities such as self-awareness, flexibility, and agency seem to nurture resilience and protect performers from the potential negative effect of stressors [38]. Therefore, the SUPER project will investigate the role of and interaction of well-known personality traits, mental skills, and physical factors (WP 1 and 2; RQ 1 and RQ 4) as predictors of

performers' sustainable performance development. Subsequently, the project will examine how resilience can be fostered and optimized by intervention components and strategies (RQ 5 and RQ 6). However, these individual components do not exist in a void.

Facilitative environment. Through a sociological lens, the culture of TIDS can be considered subcultures with their own rules and regulations that offers prototypes of the narrative of *being* [19, 22, 29, 54]. The process of embodied socialization and internalization into these specific cultural identities is important; one *becomes* a 'dancer', 'musician', or 'gymnast', socialized into an internal language, a type of collective belongingness, and mutual common practices. Hence, the specific cultures harvest unique elite cultures [27, 54, 55] that encourages a storyline of preferred identities (i.e., the 24/7 single-minded elite performer), expected behaviors (i.e., passionate, enduring, and mentally tough), and expected developmental paths (i.e., a linear and steady road to success) for the performers [19, 22, 56]. Also, being a teacher or coach seem to be a culturally constituted socialization process. As the apprenticeship cultures are highly experienced-based and tacit, they are demonstrated to reproduce a 'teach the way you were taught' practice [26, 57]. Teachers report of being trapped and pressured from above (i.e., leaders, performance expectations), from below (e.g., student expectations and resistance to change), and from within (i.e., own beliefs-systems; [23, 57]). Hence, deep contextual knowledge of the specific performance cultures seems vital to succeed with cultural change and to develop an intervention that is applicable to a range of stakeholders such as leaders, teachers/coaches, and performers (WP 2 and 3; RQ 3 and 5). In order to do so, there are several well-known and applicable theoretical frameworks that might guide intervention components comprising a facilitative learning environment (e.g., autonomy- support, student-centered learning, mastery-climate, relational quality, and constructive feedback; [23, 58]). These facilitative characteristics contrast debilitative learning environments (e.g., controlling teaching style, performance-climate, asymmetric power relations, and perfectionistic climate; [23, 58, 59]). It is important that the intervention not only promotes facilitative factors, but also decreases debilitative aspects, as research has shown that both might co-exist and that debilitative mechanisms tend to overrule positive aspects [42]).

Coping- and recovery processes. Coping is the process of adapting to or overcome stressors in order to counteract [17, 60]. While recovery comprises a range of both physical and mental activities (e.g., sleep, nutrition, restitution activities and mindfulness) that can be adopted to aid restoration when faced with situational stressors at hand [39]. Situational stressors might comprise a variety of different physical, mental, and social environmental events that affect the daily lives of performers (i.e., perceived stress, overtraining, injury, sickness, body image pressure, performance-pressure, and life-quality in large; [3, 17]). Based on Lazarus' [60] stress theory, cognitive appraisal, coping, and emotions are entwined in a dynamic interaction that influence how performers constantly adjust to changing situational demands [17, 38]. Research has shown that optimized performance requires a balance between diverse stressors and recovery yet coping and recovery is often inadequately addressed in TIDS in comparison to time spent on deliberate practice and training [16, 17, 39]. Fortunately, performance cultures and teaching practices are controllable and changeable. Therefore, the SUPER project will target and optimize these dynamic processes of coping and recovery to enhance a sustainable performance development (WP 2-3).

1.2.4 Methods

Participants, Procedures, and Ethical Considerations. The SUPER project will be set in Norwegian TIDS. We plan to include three different clusters based on level and developmental stage instead of specific age, as dance, music, and aesthetic sports have different pathways and estimated peak age. These are: (1) pre-pre professional (age range 13-18), (2) pre-professional (age range 15-22), and (3) professional (age range 18-retirement). The sports performers will be recruited from aesthetic sports such as dance, gymnastics, cheerleading, figure skating, and diving in collaboration with the sport federations, the Norwegian Olympic Sports Center, and the specialized high schools. Within the performing arts, the performers will be recruited from diverse genres of artistic dance and music in collaboration with public or municipal schools of music and performing arts and specialized universities (i.e., conservatoires).

Participants will be purposefully select for WP 1 and 2 in collaboration with the applied field of aesthetic sports and performing arts. In WP 1 we target only the pre-professional and professional performers' perspective. In WP 2, we will recruit a range of stakeholders (i.e., leaders, teachers/coaches,

and performers) aligned with the intervention delivery. In WP 3, aligned with the RCT design, we will make a randomized selection of two TIDS settings from each aesthetic sport, music, and dance comprising performers, teacher/coaches, and leaders to represent either the intervention or the control TIDS.

To ensure sound ethical procedures, The SUPER project will in WP 1 (prepare and involve) develop an overall a priori research protocol to be approved by the Norwegian Center for Research Data (NSD) and Regional Committees for Medical and Health Research Ethics (REC). We will also act in accordance with the Declaration of Helsinki, comprising informed and voluntary consent, confidentiality, and sound data management. Although the research topic is not sensitive per se, health information will be collected, and some participants will be considered vulnerable due to their young age. Thus, making ethical reflections and measures to safeguard participants will be a central part of WP 1.

Research design and methodological approaches. Mixed Methods Research (MMR) bridges quantitative and qualitative traditions, methodological frameworks, and academic disciplines [47]. It allows us to ask both theory- and practice-driven research questions and use different types of data [47, 48]. Quantitative data might illuminate associations and pathways in the sustainable development process model (i.e., strength of relations and mechanisms). Qualitative data will provide insight into the situated, multidimensional, and complex nature of such culturally embedded processes as sustainable performance development. As such, we will utilize a sequential multiphase MMR design [47]. A sequential design is divided in phases, in which data collected and analyzed from one phase are used to inform and develop the next phase, as we have planned through the three work-packages (Table 1).

In performance science, the examination of why effects occur (i.e., mediating mechanisms such as coping and recovery), or under which conditions they do (i.e., individual, social environmental, or situational stressors), are often key research questions [43, 61]. Hence, to test the initial and theorized conceptual working model (Figure 1), conditional process analysis [61] might be a useful variable-based quantitative approach. Additionally, person-centered analytical approaches that enable researchers to focus on similarities and differences between people to identify subgroups (i.e., profiles or development curves) in a population who possess a unique set of characteristics (i.e., perfectionism, adaptive coping abilities) or development patterns (i.e., training load, injury rates, energy intake) might be suitable to fulfill the project's aims and research questions [42, 62].

The SUPER project will investigate the nature of the unique performance cultures that constitute the social environmental conditions of the TIDS. A case study comprising three distinct sub-cases of TIDS from music, dance, and aesthetic sports, might be a useful qualitative approach [63]. At best, a case study offers the most vivid analysis that inquiry can offer, and it explores a setting or phenomena in its full complexity. The aim is to look at the cases (the TIDS) from varied angles and perspectives (i.e., power structures, organizational structures, different stakeholders' experiences, belief-systems, transitions, and pathways) at both a macro (i.e., societal), meso (i.e., TIDS), and micro (i.e., individual) level [40].

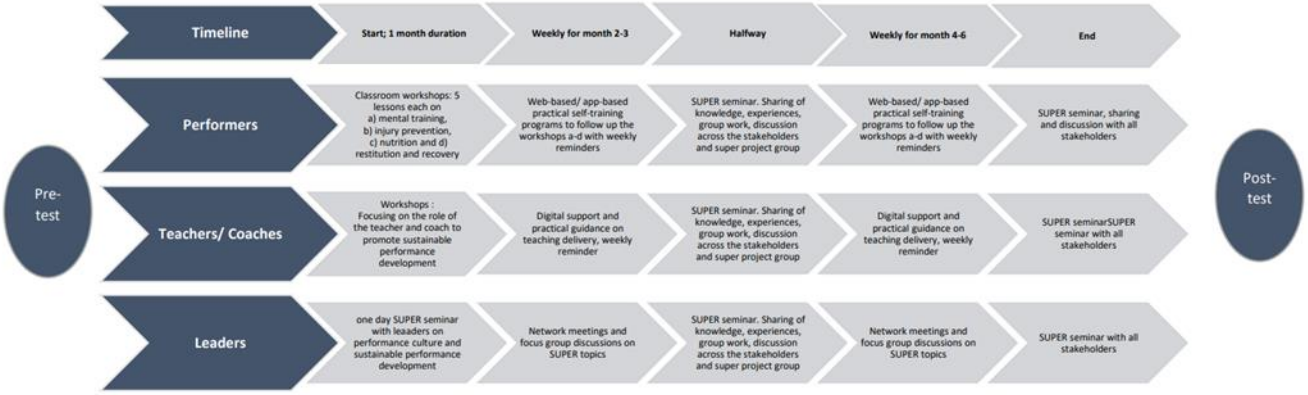

Figure 2: The SUPER intervention components

To ensure the development of a sustainable and efficient intervention, we will adopt the robust and well-known RE-AIM framework [64]. RE-AIM has been developed to help address the research-to-practice

gap that often is a barrier to successful interventions (WP 1 prepare and involve). More specifically, RE-AIM has both individual-level and stakeholders/case-level dimensions, including reach and efficiency, adoption and implementation, and maintenance (WP 2 explore, pilot, and optimize). Lastly, RE-AIM can enable transparent dissemination and implementation, which are keys to enhance the impact of the SUPER project (WP 3 evaluate; [64]). The SUPER intervention will be optimized and carried out as a 6-month intervention program (WP 1-2) with diverse and specific interventions components targeting the different stakeholders such as performers (see Figure 2).

Possible risks that might endanger achievement of project objectives. The SUPER project is a complex project. This is both a strength and a weakness, as it requires rigorous planning, involvement, and steady project management. Time is another risk-factor. However, we have invested in sound and detailed project involvement and planning in the project group ahead of this application (i.e., the work-packages, interdisciplinary contributions, role understanding), established a relevant reference group and spent time on the project organization and recruitment of complementary competence (see 3.2 for details).

1.3 Novelty and ambition

The SUPER project is ambitious and novel in several ways. It is theoretically interdisciplinary, comparative, and aligned with the state of the art, aiming to bridge biopsychosocial aspect together in a research field that too often has worked mono-disciplinary, either physical, psychological, pedagogical, or sociological, in single performance settings (i.e., dance, music, or sports). Also, it is methodological sophisticated and provide advancement in the field of performance science (i.e., mixed methods, MOST intervention optimizing framework, RE-AIM framework, RCT experimental evaluation of applied effects). Finally, the project has merits for applied impact, as it is directly in collaboration with and set in the applied field of TIDS. Thus, it aims to bridge the repeatedly identified gap between experience-based practices and research-based knowledge within TIDS [23, 41].

2. Impact

2.1 Potential for academic impact of the research project

Following the state of the arts and the SUPER project's novelty and ambitions elaborated in section 1, the project has numerous potentials for academic impact. Specifically, the project will:

- ✓ Produce, publish, and communicate new, interdisciplinary, and relevant knowledge within performance science based on holistic perspectives to performance development that integrate biopsychosocial perspectives.
- ✓ Develop, share, and combine sophisticated and rigorous multi-methodological approaches within both performance science and educational science and contribute to move these research fields forward
- ✓ Publish research in high-ranked and open access international journals and participate at relevant international and national research conferences and seminars.
- ✓ Fulfill national research strategies: (a) research collaboration at national and international level, (b) contributing to recruitment positions, (c) conducting intervention studies that address the well-documented research-to-practice gap, and (d) conduct applied research with stakeholder involvement.
- ✓ Conduct practice-relevant research and contribute to quality development within the educational sector (i.e., TIDS) and the professional field that the TIDS educate to ensure more sustainable and lifelong career pathways.

2.2 Potential for societal impact of the research project

In relation to the applied dimensions and societal impact, the SUPER project's impact might be substantial as it directly addresses apparent educational challenges and ethics, occupational hazards, and threats to a sustainable and healthy performance development (see 1.1). The impact is important to view in a long-term perspective as new students continuously will come and go, while the educational systems remain. Hence, the project also contributes to promote the UN's Sustainability goal nr. 3 of promoting *good health and well-being* (absence of ill-health and opportunity for thriving), nr. 4 *Quality education* (i.e., foundation of sustainable life opportunities), and nr. 8 *Decent work and economic growth* (i.e., healthy work life and long-lasting career opportunities) for the performing arts and aesthetic sport settings. In a

broader picture, the cultural industry is central to the WHO in their promotion of good health and well-being, as they represent important areas enhancing democracy, well-being, and life quality in the society at large [65]. Specifically, societal impact will be:

- ✓ Ensure quality development in the educational system concerning the specific Norwegian TIDS and make a positive difference in promoting sustainable, healthy, and thriving performance cultures.
- ✓ Ensure more sustainable performers that get increased opportunities to thrive, develop life skills, and maintain long-lasting careers.
- ✓ Use the intervention components to develop educational programs for leaders, teachers/coaches, and performers to nurture sustainable performance development to the wider applied field.
- ✓ Contribute to enhance life-quality and well-being to the public at large by ensuring more sustainable and long-lasting performance careers accumulated into the cultural industry.

2.3 Measures for communication and exploitation

Targeted audience of the SUPER project is (a) the research community in performance science, (b) stakeholders in TIDS, (c) the elite performance community, (d) teacher and coach education institutions, (e) media, and (f) the public at large. We have specific plans to involve and collaborate with research expert partners and stakeholders and the performance community (see 3.2 for details) throughout all phases of the project (WP 1-3). Specific measures to ensure the reach and impact of the project result:

- ✓ Dissemination in the academic community; open access scientific publication (estimated 3 articles per PhD candidate and post doc/research group fellows, 1-2 overall methodological articles, and 1-2 popular scientific publications), public defense of PhD projects, dissemination at national/international research conferences.
- ✓ Yearly SUPER seminar in Norway in collaboration with reference group and external partners from the applied field, including students at KHiO, NMH, and UIA where results are distributed.
- ✓ Initiate and participate in the public discourse.
- ✓ Project report and evaluation.
- ✓ Strategic, dynamic, sound, and efficient project management including active use of reference group involvement and close collaboration with key stakeholders during the entire project period.
- ✓ Utilize institutional webpages and social media channels in all three project partners institutions and the reference group and collaborative partners' network to reach out with communication and engagement strategies.

3. Implementation

3.1 Project manager and project group

The SUPER project is interdisciplinary and comparative in nature. The various institutions and carefully recruited expert partners represent different expert areas that to contribute with complemental competence regarding theory (i.e., psychology, sociology, pedagogy, medicine), methodology (e.g., qualitative, quantitative, intervention studies, randomize control trials), and domain specificity (e.g., music, dance, and aesthetic sports; see Table 2 and attached CVs for details). To ensure realistic and sound project management, the project management comprises a research project leader (academic overall responsibility) and project coordinator (research administration and project management). The project leader, has a PhD in performance psychology from the setting of TIDS within sports and performing arts, comprising comparative and mixed methods research [42]. She leads the REDE (Resilience and Ethics in Dance Education) research group and work with teacher education in performing arts and mental health prevention among dance students.

3.2 Project organization and management

The different project partners will be essential and complementary parts of the project and contribute to all phases of the SUPER project, from planning, researching, evaluation, distribution, and implementation of the acquired knowledge.

Table 2: *List of project group and research partners complemental competence and roles*

Participants	Profiles	Project role
Heidi M. Haraldsen, Oslo National Academy of the Arts (KHiO) Leader REDE (Resilience and Ethics in Dance Education) research cluster Associate professor pedagogics, program leader Teacher education	Higher education pedagogics, teaching and education, arts pedagogy, aesthetical learning processes, action research, sport psychology, motivational psychology, performance psychology, perfectionism	Project leader, project group member, mentor post doc, Co-supervisor PhD 1, WP 1-3
Michelle Schachtler Dwarika, KHiO Assistant professor in performance psychology and dance science, member of REDE research cluster	Dance Science, dance-and performance psychology, autonomy in learning processes, mental health consulting in sports and dance, administrative coordination in higher education	Project coordinator WP 1-3
Sanna M. Nordin-Bates, KHiO/GIH (Gymnastikk og idrotshøskolan) Docent in sports and sports psychology, intended Professor II KHiO	Sport psychology, performance psychology dance science, mental training, movement, and dance	Project group member, mentor post doc, WP 1-3
Monica Klungland Torstveit, UIA. Professor in sports science, head of unit for sports nutrition and restitution, head of research for Olympiatoppen Sør	Sport science, sport nutrition, restitution, health interventions, RTC	Project group member, main supervisor PhD 1, WP 1- 3
Halgeir Halvari, USN, Professor	Motivational psychology, Self Determination theory, health interventions, RCT studies	Project group member, WP 1-3
Bård Erlend Solstad, UIA Associate professor in sport science and Physical Education	Children-and youth sport, motivation, coach education, total workload in everyday training, psychology and injuries	Project group member, co-supervisor PhD 2, WP 1-3
Christine Holm Moseid, Dr. med. Oslo Sports Trauma Research Center (NIH), Norsk idrettsmedisinsk institutt (NIMI)	M.D. specialist in physical rehabilitation Sport medicine, injury prevention in sport and dance	Project group member, co-supervisor PhD 1, mentor post doc, WP 1-3
Sigrid Røyseng, Norwegian Academy of Music (NMH), Professor in music pedagogy, music therapy and cultural sociology Member of Center for Educational Research in Music (CERM)	Art politics, cultural politics, power distribution, cultural sociology.	Project group member, main supervisor PhD 2, WP 1-3
Johannes Lunde Hatfield, HINN/NMH Associate professor in pedagogics	Pedagogics, education, music psychology, performance psychology, motivational psychology	Project group member, co-supervisor, PhD 1, WP 1-3
Ellen Mikalsen Stabell, NMH/HINN Associate professor (INN) and head of CEMPE (Center of Excellence in Music Performance Education), NMH	Music pedagogy, talent development.	Project group member, WP 1-3
Aaron Williamon, Royal College of Music Professor in Performance Science	Performance psychology, positive psychology, mental health. Chief editor of Frontiers in Psychology, section Performance Science.	Research expert partner
Oslo Sports Trauma Research Center, Norwegian School of Sports Sciences	Aim to prevent injuries and other health problems in sports through research on risk factors, injury mechanisms, and prevention methods	Research expert partner
Andreas Ivarsson, Høgskolen i Halmstad Associate professor in psychology and welfare	Statistics, statistical analysis, quantitative research, injury prevention, psychological assessment, rehabilitation, biomechanics	Research expert partner
André Lee, Professor, Dr. med, Hanover University of Music, Drama and Media, Institute of Music Physiology and Musicians' Medicine	Music physiology and medicine	Research expert Partner
Postdoc	To be recruited	Project group member, WP 1-3
PhD student 1	To be recruited	PhD project 1, WP 2
PHD student 2	To be recruited	PhD project 2, WP 2

The active interaction and exchange between partners (see Figure 3) will ensure good implementation and optimal transaction of knowledge, input, and communication in the project. The project group will ensure high quality scientific competence, while the reference group will contribute with relevant experience-based competence, key stakeholders' involvement, and communication- and engagement support. The collaboration with the applied field will involve partners in piloting, optimizing, and evaluation of intervention components, to assist recruitments of participants, and partake in activities linked to dissemination, communication, and engagement activities. Additional supporting functions (study administration, communication, economical support, and infrastructure) are available through the project owner institution (KHiO), however, also by the main partner institutions while running each PhD project (UiA and NMH).

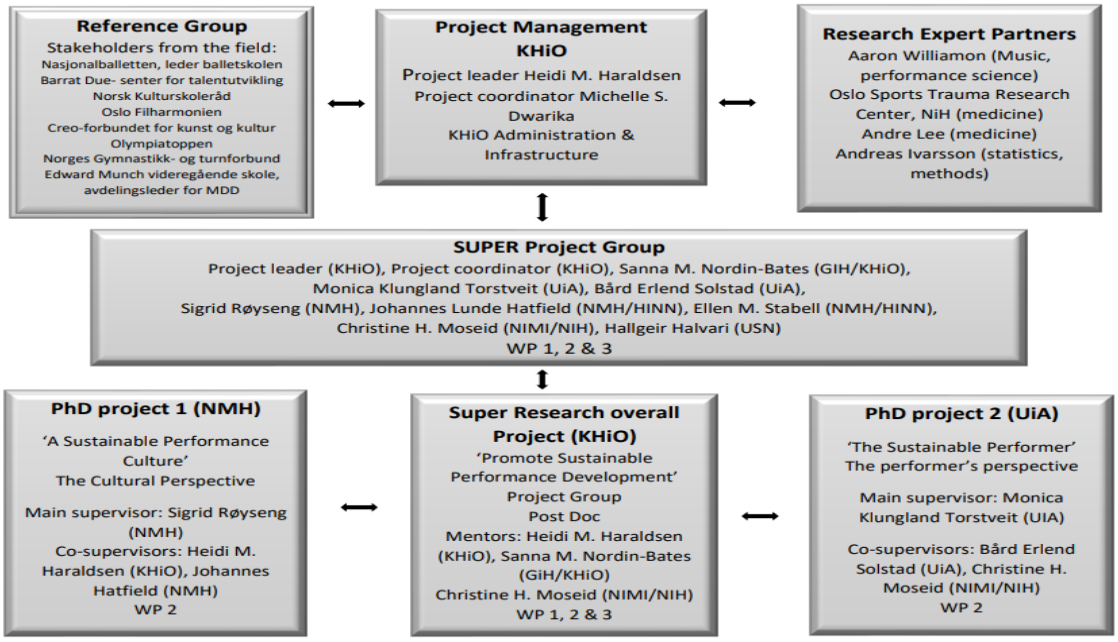

Figure 3. The organizational model of the SUPER project

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