Riding the Wave of an Expert: A Successful Talent Development Environment in Kayaking

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The holistic ecological approach to talent development in sport highlights the central role of the overall environment as it affects a prospective elite athlete. This paper examines a flat-water kayak environment in Norway with a history of successfully producing top-level senior athletes from among its juniors. Principal methods of data collection include interviews, participant observations of daily life in the environment and analysis of documents. The environment was centered around the relationship between prospects and a community of elite athletes, officially organized as a school team but helping the athletes to focus on their sport goals, teaching the athletes to be autonomous and responsible for their own training, and perceived as very integrated due to a strong and cohesive organizational culture. We argue that the holistic ecological approach opens new venues in talent development research and holds the potential to change how sport psychology practitioners work with prospective elite athletes.

The world of elite sport presents increasing physical and mental challenges to athletes while making ever greater financial demands on sporting organizations. Sport systems capable of developing athletes to the highest international levels are likely to receive financial rewards and recognition. For these reasons, talent detection and development have become central challenges to all sport systems.

Applied sport psychology contributes to helping young talented athletes realize their potentials, and successful talent development alongside elite performance has been linked to psychological concepts such as motivation (e.g., Ryan & Deci,
Henriksen, Stambulova, and Roessler 2000; Vallerand & Losier, 1999) discipline and commitment (e.g., Holt & Dunn, 2004), volition (e.g., Elbe & Beckmann, 2006), mental skills (e.g., Abbott & Collins, 2004; Vealey, 2007), coping (Poczwardowski & Conroy, 2002) and other individual or group attributes.

In this paper we introduce a holistic ecological approach to athletic talent development—one that focuses on the whole athletic talent development environment (ATDE) rather than on the individual athlete—and present the case of a successful ATDE. We argue that the holistic ecological approach, if adopted by sport psychology practitioners, can change their assessments and strategies when working with prospective elite athletes.

The link between research and practice is clearly formulated in the practitioner-researcher model (Jarvis, 1999) and the modern scientist-practitioner model (Lane & Corrie, 2006) that both underscore the importance of reflective practice and being an explorative researcher while doing applied work with clients. In articulating sport psychology as cultural praxis, Ryba and Wright (2010) point out that such praxis works with elements of theory, research and practice and thus further bridges the gap between academic and applied work. The sport psychology practitioner must be viewed as a researcher who relies on theory as he or she makes an assessment of a problem and decides on a strategy to solve it. “… practitioners need to do some work or construct problems from the fragmented and fuzzy situations that make no sense by naming the things that are perceived as relevant and setting them into the frame of a specific problem” (p. 20). In other words, the reflections (often based on dominating theories and research trends) a consultant brings to the situation influences his/her assessment and thereafter the intervention strategy. As an example, applied work with young talented athletes mirrors the evolution of talent in sport research over the last three decades.

In this evolution one research trend has been talent detection and identification, based on the notion that there is an innate reservoir of talent. Using an advanced assessment of the prerequisites for athletic excellence, sporting organizations aim to identify such talent and predict who is likely to excel (Howe, Davidson, & Sloboda, 1998; Hohmann & Seidel, 2003). Within this line of work, the sport psychology practitioner’s role is to assess psychological prerequisites for sporting excellence. However, the difficulties involved in such selection (Lidor, Côté, & Hackfort, 2009) have stimulated researchers to shift the focus from traits to skills (Durand-Bush & Salmela, 2001).

A second trend in the athletic talent research has been talent development, which focuses on the individual athlete’s acquired skills and the quantity and quality of training needed to reach top-level performance. As illustrated in the Developmental Model of Sport Participation (Côté, Baker, & Abernethy, 2007), this developmental approach itself comprises two pathways to elite performance. The elite performance through early specialization trajectory advocates early specialization and deliberate practice (highly structured, goal-oriented, supervised training designed to improve performance) leading to elite performance (Ericsson & Lehmann, 1996; Ericsson, Krampe, & Tesch-Römer, 1993). The elite performance through sampling trajectory involves a gradual move from sampling more sports to focusing on one sport, accompanied by a gradual move away from deliberate play (intrainscially motivating, self-organized activities designed to maximize enjoyment) and toward deliberate practice, and is seen as a more healthy route to top-level performance.
performance (Côté et al., 2007; Côté, Lidor, & Hackfort, 2009). In either trajectory, the role of the sport psychology practitioner is to build skills and resources in the athletes that underpin their long term motivation and development.

As a further trend, research into athletic careers has stimulated the sport psychology professionals to adopt a holistic lifespan perspective (Alfermann & Stambulova, 2007; Stambulova, Alfermann, Statler, & Côté, 2009; Wylleman & Lavallee, 2004). The whole person approach inherent in today’s career literature examines athletic careers as a reciprocal interaction between development in the athletic domain and development in other areas, since key transitions in the sport domain co-occur with transitions in the academic vocational, psychological and psycho-social domains (Wylleman & Lavallee, 2004). The transition from junior to senior sports is a key challenge for talented junior athletes (Stambulova, 2009). A particularly salient risk during this transition is that of developing a one-sided athletic identity, which jeopardizes not only the athlete’s successful sports career but also the successful adaptation to life after sport (Lavallee, Gordon, & Grove, 1997; Lavallee & Robinson, 2007). The International Society of Sport Psychology Position Stand recommends that sport psychology practitioners assist elite junior athletes in relation to career planning, balancing lifestyle, stress/time/energy management and effective recovery (Stambulova et al., 2009). Although promoting a whole person approach, the holistic lifespan perspective is still individual in the sense that focus is on the individual athlete and the challenges he or she experiences in relation to life as an athlete.

Recently there has been a call for a more ecological perspective, one that stresses the role of interaction between the person and his/her context (Garcia Bengoechea, 2002; Garcia Bengoechea & Johnson, 2001; Krebs, 2009). Advocating the integration of Bronfenbrenner’s (2005) bioecological model of human development into research in the sport domain, these authors stress that talent development is affected by the complex interrelationship between process, person, context and time (PPCT model). Although these authors aptly demonstrate the potential contribution of ecological theory to research and practice in sport psychology, the ecological approach has been largely missing in talent research (Araujo & Davids, 2009).

**Holistic Ecological Perspective in Studying Athletic Talent Development Environments**

In an effort to transform the ecological perspective into a manageable framework and methodology, Henriksen, Stambulova and Roessler (2010a; 2010b) have introduced a holistic ecological approach, with a focus on the environment in which prospective elite athletes develop. Such environment is called athletic talent development environment (ATDE) and defined as

\[\text{\ldots a dynamic system comprising a) an athlete’s immediate surroundings at the micro-level where athletic and personal development take place, b) the interrelations between these surroundings, c) at the macro-level, the larger context in which these surroundings are embedded, and d) the organizational culture of the sports club or team, which is an integrative factor of the ATDE’s effectiveness in helping young talented athletes to develop into senior elite athletes (Henriksen, 2010 p. 160).}\]
Two working models represent the holistic ecological approach. The first model is the athletic talent development environment (ATDE) working model, which is a framework for describing a particular athletic environment and for clarifying the roles and functions of the different components and relations within the environment. The environment is depicted as a series of nested structures. The young prospect athletes appear at the center of the model, and other components of the ATDE are structured into two levels (micro- and macro-) and two domains (athletic and nonathletic). The microlevel refers to the environment where the prospect athletes spend a good deal of their daily life, such as the club environment (immediately surrounding the athlete), school, friendship groups and family. The macro-level refers to social settings, which affect but do not contain the athletes, such as sport federations, media, the educational system and reference groups, as well as to the values and customs of the cultures (such as national and sport specific cultures) to which the athletes belong. The athletic domain covers the part of the athletes’ environment that is directly related to sport, whereas the nonathletic domain presents all the other spheres of the athletes’ lives. The outermost layer of the model presents the past, present and future of the ATDE, emphasizing that the environment is dynamic and the athletes and their contexts are constantly changing and influencing each other.

The second model representing the holistic ecological approach is the environment success factors (ESF) working model, which structures factors that provide the environment’s success and thus has an explanatory potential. The model takes as its starting point the preconditions provided by the environment (e.g., human, financial and material resources), which are necessary but do not guarantee success. The model then illustrates how the daily routines or process (e.g., training, camps and competitions) have three outcomes: the athletes’ individual development and achievements (acquisition of psycho-social competencies and athletic skills), team achievements (in team sports), and organizational development and culture. All of these are highly interrelated and influence the environment’s success. “Organizational culture” is central to the ESF model and consists of three levels. “Cultural artifacts” are visible manifestations such as stories and myths told in the environment, clothing, buildings and organization charts. “Espoused values” are the social principles, norms, goals and standards that the organization shows to the world (i.e., what the members say they do). “Basic assumptions” are underlying reasons for actions that are no longer questioned but are taken for granted (strongly affecting what the members actually do). Organizational culture is characterized by the integration of the key basic assumptions into a cultural paradigm guiding socialization of new members, providing stability and adapting the organization to a constantly changing environment. The ESF working model therefore predicts that the ATDE’s success (i.e., effectiveness in producing senior elite athletes) is a result of the interplay between preconditions, process, individual and team development and achievements, with organizational culture serving to integrate these different elements.

The two working models (presented in Henriksen et al., 2010a) were derived heuristically based on a theoretical framework of ecological psychology (Bronfenbrenner, 2005), systems theory (Bateson, 1973; Patton & McMahon, 2006) and cultural and cross-cultural psychology (Berry & Triandis, 2004; Schein, 1992) and on a review of existing research on athletic talent. The models were used to guide
the research and design research instruments (interview- and observation guides). After investigating a specific environment, empirical versions (based on empirical data) of the models were developed that capture the unique features of the environment under study and serve as a summary of the case.

The holistic ecological approach sets new challenges for sport psychology practitioners and also holds the potential to enrich their practice. Adopting this approach may help the practitioners become more sensitive to the athletes’ context, and the working models provide a framework for sport psychologists to structure their interventions when aiming to improve an ATDE as a whole.

The present study explores a successful talent development environment in flat-water kayak racing. This case provides an example of how the holistic ecological approach can be used to describe an ATDE and explain its success in developing elite athletes. A successful ATDE was chosen to further illuminate the potential positive contribution of the environment in the development of athletes. The present study is a part of a larger research project on successful ATDEs in Scandinavia, which includes two more cases that are the Danish national 49er sailing team (Henriksen et al., 2010a) and the IFK Växjö track and field club in Sweden (Henriksen et al., 2010b). Objectives of the current study include: (a) providing a holistic description of a successful ATDE, namely Wang school of elite sports’ kayak team in Norway, and (b) examining factors influencing its success in developing prospective elite paddlers. Based on the results we will discuss how the holistic ecological approach can help practitioners to work more effectively with young talented athletes as well as with entire ATDEs.

Method

The present study adopts the holistic ecological approach and takes a contemporary—or real time—view of the functioning of the environment. The study can be defined as an ethnographic study grounded in a constructivist paradigm (Krane & Baird, 2005). As such the study aims for a rich understanding of a particular group (i.e., the ATDE), and “does not engage assumptions of value-free or neutral observations, is historically and situationally bound (i.e., it may not be replicable or generalizable) and realizes the influence of the researchers on the research…” (p. 89).

Selection of Wang School of Elite Sports’ Kayak Team, Norway

The flat-water kayak team at Wang School of Elite Sports was selected due to its success in developing young paddlers into elite senior athletes. Indicators of this success are the impressive results of Norwegian senior elite kayakers and the flow of young Wang paddlers into the Norwegian senior national team. Norwegian paddlers have won medals at every Olympic Games from 1992 to 2008, have been represented in the finals at every World Championships since 1968, and total 123 medals at the senior European and World Championships and Olympic Games. Wang reports a steady flow of their paddlers into the Norwegian national teams. In the current structure Norway’s senior national team consists of a performance and a development team, and more than half of all paddlers in this overall team are
former or current students at Wang. Further, it should be noted that the Norwegian Canoe Association recommends skilled young paddlers to attend the Wang program.

Participants
The central members of the environment under study were young prospective elite athletes who were recognized as ‘talented’ but who had not yet made it to the senior elite level. More specifically, the target group of the study is the group of athletes who attend Wang’s kayak program and are embarking on a transition from talented junior to elite senior athletes (age 16–19). Besides the target group of prospective elite athletes, the environments had a number of other participants included in the study, such as elite athletes, coaches, managers and parents.

Research Methods and Instruments
We collected data from interviews, participant observation and document analysis, as described more fully in Henriksen (2010).

Interviews. Keeping a similar structure, separate interview guides were made to allow for different perspectives of the participants. Young prospect athletes were interviewed about the environmental facilitators and barriers they encountered on their way to success and about the environment’s perceived effects on their development. Focus was on the microenvironment and their daily activities. Coaches were interviewed to find out how they ensure that the immediate environment is conducive to the talent development process, how they assess its effect on the athletes and what is done to optimize this. They were also asked to comment on macro-environmental influences and daily routines. Club and school administrators offered insights into the larger environmental system in which the club is embedded. They were primarily asked to comment on club/school values, macro-environmental influences, historic dimensions, financial and human resources and initiatives to work with the surrounding environment. The elite athletes were asked to comment on their own role in regard to the young prospective elite athletes’ developmental process.

Participant Observation. To achieve contextual sensitivity, emphasis was placed on participant observation of the prospective elite athletes in the natural setting of their daily lives as an important method of data collection. This method gave the principal researcher a profound feel for the culture (Krane & Baird, 2005) and made it possible to study the athletes in diverse contexts, such as at training, in competition and at camps and social events. We structured the observation guide loosely with predetermined areas of interest derived from the ATDE and the ESF working models. The observations included a number of informal conversations with athletes, parents, club administrators, the youth and senior national team coaches, the school’s sports coordinator and a number of coaches from different clubs and nations.

Analysis of Documents. We analyzed the team’s success statistics, the school’s mission statements and school and club web pages.

Procedure
Preliminary acceptance from the athletes was gained through their coaches. Full anonymity was offered but not accepted by the coaches and management. Instead,
it was agreed that the identity of the team could be disclosed but that names of individuals would be kept confidential. It was also agreed that the findings would be shown to the environment before publication. We informed the participants about this agreement and about the objectives of the study, and that they had the right to drop out at any time.

Interviews were conducted with five young prospective elite athletes (representing all three year groups and both genders—in one year group there were only male athletes), two elite athletes, the school coach, one of the club coaches, the head of top sports at the school and one athlete’s father, who was often in the club. The interviews lasted between 60 and 90 min and took place in available settings, including at the school and in the club meeting room.

Observations were carried out during one standard training week in Norway in the spring, during the Nordic Championships in Denmark in the summer, and during an intensive training camp in Portugal in the autumn. These observations included training on the water, weight lifting, running and alternative sports, competition, transportation, and social events. During the training camp the primary researcher also took part in meetings, meals and social trips. In total, observations covered about 150 hr of team practice, spread out over six months during preseason, peak competitive season and postcompetitive season. During observations the researcher assisted the coach and athletes in setting up race courses, moving buoys and taking video, and also participated actively in a number of weight-lifting and running sessions.

Data Treatment and Interpretation

First, all interviews and observation notes were transcribed. Second, the transcribed material was coded using a deductive-inductive approach. The deductive coding was based on a node tree built to reflect the working models and primarily involved high-order themes. The inductive coding expanded the node tree when new categories or ideas emerged, and primarily involved low-order themes and the content of the themes. As this is part of a multiple case study, an interrater reliability check was performed during the coding of the first case. Third, interviews and observations were subjected to meaning condensation (Kvale, 1996), whereby the informants’ statements were condensed into more precise formulations. Fourth, each node was read several times, the main themes were listed, and a summary of each node was written. This approach bears a resemblance to a narrative approach and is “supported by the philosophical assumptions of interpretivism” (Smith & Sparkes, 2010 p. 80). The constructive nature of the research was particularly evident in the analysis of the basic assumptions of the environment’s organizational culture. We derived these assumptions by interpretation based on the interviews, communication, observations and practical involvement in the environment’s daily life. Fifth, and in a cyclic approach of a continuous dialogue between our preconceived working models, data, our interpretation and feedback from the informants (Maaloe, 1996), we created empirical versions of both working models, based on the empirical data and reflecting the unique qualities of the environment under study. Finally, and serving as a stakeholder check (Patton, 1990), the results including empirical models were presented to the relevant participants, who were asked to reflect on the degree to which they considered the results an accurate portrait of their environment.
Results

In the following sections we present the Wang kayak team as a case. The presentation takes as a starting point the empirical versions of the ATDE and ESF working models, as these two models summarize the results of the data analysis. In presenting the results of the study, therefore, we proceed from a holistic description of this environment to an explanation for its success in developing athletes. For the sake of conciseness the term “athletic talent development environment” will be replaced by “environment”, “athletes that are part of Wang’s kayak team” by “prospects”, “the kayak coach employed by Wang” by “school coach”, “the coaches in Strand Kayak Club by “club coaches”, and “head of top sports at the Wang School” by “head of sport”.

Introducing Wang Kayak Team

Wang School of Elite Sports is a private secondary nonboarding school located in the heart of Oslo. Wang has been a “school of elite sports” since 1984 and today hosts approximately 500 students of which 360 are also prospective elite athletes. These athletes participate in 20 different sports, and the school has 76 part-time employed coaches. Secondary school in Norway takes three years and is in general open for all and free of charge. But as a private school, Wang students have to qualify and pay tuition fees (about 3400 $ annually). Approximately half of the students are involved in a national youth team in their sport. The athletes at Wang receive sports training as part of their daily school program comprising 250 hr a year which equals 25–40% of an athlete’s total amount of training and is seen as a supplement to the athletes’ club training. Wang training takes place from a local kayak club named Strand, where the athletes also train in the afternoons. Flat-water kayakers race over four different distances: 200m, 500m, 1000m and marathon, and in single (K1), double (K2) and four boats (K4).

The ATDE Working Model Adapted to Describe the Wang Kayak Team

Figure 1 displays the empirical version of the ATDE model adapted to present the Wang kayak team. Bearing in mind that all the components of the environment are interconnected and affect one another, the model depicts the most important components and relations as well as the structure of the environment.

Microenvironment. The group of Wang paddlers comprises 11 prospects between 16 and 19 years of age with three, four and four athletes in each year group. The group benefits from having both genders represented, although only three of the prospects are girls. This picture is general for Norwegian paddling, where male paddlers outnumber and outperform female paddlers.

At the center of the model are the relations between the prospects and a community of current and former elite athletes, all still active paddlers and members of the club. The community includes the school, club, and national team coaches, and also a number of mentors. The elite athletes are proximal role models for the prospects, and the interaction with this community is the main driver of the prospects’
development. The current national team athletes often take part in training organized for the prospects, which is encouraged by the school. All athletes and coaches mention “having someone to aspire to” as a central quality of the environment. A club coach refers to the daily exchange of knowledge and ideas as osmosis, a concept from biology that describes the diffusion of liquid through permeable membranes. Here he describes the diffusion of knowledge between athletes in a group:

The relationship between prospects and elite athletes is immensely important. The athletes learn training culture, technique, everything. I call it osmosis because knowledge simply diffuses. The athletes don’t know who taught them what, but they have learned the trade. I believe all Norwegian top paddlers are a product of a little help here and there rather than one coach or one program.

Commenting on the importance of the elite athletes’ presence in daily training, a prospect added that “All sports have their role models. What is unique for

Figure 1 — The athletic talent development environment (ATDE) empirical model of the Wang kayak team.
our environment is that I actually meet these role models every day. I try to beat them in training and I listen to their advice”. The nature of paddling contributes positively to this community learning. Paddling close behind another paddler on his or her wave means an athlete can paddle approximately 30% faster, allowing a prospect to train with a much faster athlete. From a perspective behind and to the side of the faster paddler, the prospect watches technique, stroke frequency, etc.

The school has two part-time coaches (a male and a female, both former national team paddlers). Strand kayak club has a number of volunteer coaches. The prospects have difficulties naming a main coach, and the coach’s role is described more as that of a mentor or sparring partner than that of a traditional coach, as emphasized by a prospect: “They do not present an exact program. We discuss training plans, how to organize a week’s training and how often I should train with high intensity”.

Training is informally coordinated among club, national team, and school coaches. Coordinating the programs, which some might consider nearly impossible, runs smoothly and requires only a minimum of communication for two reasons. First, Norwegian kayaking is built around an implicit “philosophy” about training, and all coaches are former elite athletes raised within the system. This philosophy will be described in more detail below. Secondly, all athletes receive general outlines rather than specific programs, and the athletes adjust their programs to allow them to train together. It is an implicit rule that the younger athletes adapt their program to fit that of the elite athletes.

The role of the elite athletes is reproduced by the Wang prospects toward younger athletes, as was explained by a prospect: “Just as I stretch to reach the elite paddlers, so these young paddlers stretch to reach me. In a hard training session, I paddle the waves of the elite athletes, and in a slower session, the youngsters paddle my wave”.

Wang and Strand have excellent relationships with other kayak clubs in Norway. In fact, most athletes and coaches spoke little of the clubs and much about “Kayak-Norway”. It is a characteristic of the Norwegian kayak environment that many paddlers have their daily training in a club other than the one they represent in competitions, and a paddler on holiday is always welcome to train in the local club. This is how a prospect describes a tradition to seek out the best athletes to become best: “I came to this club to train with the best and most ambitious Norwegian paddlers. This is where I can learn the most.”

Approximately half of the athletes come from families where the parents have been involved in elite kayaking or other sports at the elite level. These athletes typically mention that their parents nourish an elite mentality, for example by demanding commitment to training. The other half of the athletes have parents with no prior experience of elite sports. These athletes find their parents back them up but are not particularly involved. Common for all athletes is the fact that they rely on the parents’ financial support. When parents follow the athletes to competitions, they are most often assigned a formal role and given a responsibility toward the whole group.

The prospects all report having friends from inside and outside the world of elite sport. Most of their sports friends are paddlers. For a national team-boat to succeed, the athletes from different clubs have to meet and train every once in a
while, and friendships arise along the way. The prospects also have a number of friends from school who are committed to other sports. With these friends they discuss sporting issues such as basic training principles. Finally, the prospects have friends who are not involved in sports, with whom they unwind mentally from the sport and relax. Membership of such groups of friends is considered to be important but also taxing, and the athletes must continually negotiate the terms of their membership of the group, for example that they attend activities less frequently than other members and rarely participate in parties.

The school is a central part of the athletes’ lives. The school organizes the group and its three weekly morning training sessions, employs the school coach, and makes an agreement with the club about the nature and content of the training. The school has a reputation not only for having a good talent development program, but also for providing good education. A parent commented:

Wang’s basic philosophy is to be a good school. ...They have a classical pedagogical approach and make up for time spend on training by having classes until late in the afternoon. And the students do well in school. (From observation material)

Coordination between the academic and sporting part of school works well. The school teachers have a good understanding of elite sport and adjust school to fit the needs of the student-athletes, for example letting them eat during a class or arranging extra classes rather than expecting them to do much homework. The head of sport explained how the school is making clear that coordination between school and sport works on the sport’s premises:

When an athlete applies for days off for camp or competition, a teacher’s first expression must never be “not again”, but rather “well done.” We have to want our athletes to do well, go to competitions and be selected for camps with the national team.

The fact that many different sports are represented in the school is seen as a resource, as explained by a prospect: “I know which athletes are competent in what areas of expertise. I talk to the javelin throwers about strength training and with the sprinters about speed training and I learn a lot.” The athletes find the common sporting mentality very important and find it disruptive when other students lack sport commitment. Therefore, athletes who are no longer motivated in sport and disrupt fellow students are asked by the school to change school, unless this happens near the end of the three years. But this has never been the case with a paddler.

Macro-Environment and Related Contexts. On the macro-level acting as a cohesive force, the school management organizes relations with the club and with Olympiatoppen’s team of experts. These experts are invited to the school to give talks on various subjects, but the kayakers rarely use such experts in a more structured way. The federation is responsible for all national team training. National teams include the senior team, a challenger team that trains with the seniors but receives less support, and youth national teams. Almost all Wang paddlers are members of a national team. The athletes mention that being part of such a team is motivating and a good learning opportunity.
The specific sports culture of kayaking is distinct, and attending a school with many other sports makes this fact clear to the athletes. Athletes and coaches mention openness, patience and discipline as major characteristics of the kayak culture in Norway. Norwegian national culture is considered a resource for the development of talent in sport. Athletes and coaches mention determination and independence as central qualities of Norwegian national culture. A club coach explained how Norwegian culture is linked to the country’s history: “It all goes back to our history as independent farmers in the mountains and fishermen alone at sea. A Norwegian mindset dictates responsibility for one’s own life. We celebrate people who are successful in doing things their own way.”

Environment in the Time Frame. The time-frame depicts a basic belief in the current state of affairs but also a willingness to develop an even more uncompromising approach to the nurturing of the athletes’ potential, for example by providing training in school holidays and expanding the school to lower secondary level.

The ESF Working Model Adapted to Explain the Success of the Wang Environment

Figure 2 presents the empirical version of the ESF model, summarizing the most important factors influencing the success of Wang kayak team as a talent development environment.

Preconditions. The team has limited financial resources but benefits from a world-class natural environment in a fjord that is easy to access and provides perfect conditions for flat-water racing along with a good learning environment in which skilled paddlers and volunteer coaches willingly pass on their knowledge. The low budget air of the sport was observable at competitions where the athletes often sleep in classrooms or tents. Although the financial means are not overwhelming, they are important to the club, as explained by a club coach:

We have no means to employ coaches. But we pay for any young paddler who wants to go to a competition, regardless of whether he is good or bad, newcomer or longstanding member. This goes well with our overall wish to be an inclusive club with a focus on competitive youth paddling.

Process. The daily routines revolve around a large volume of hard interval-based training and frequent tests and competitions. The prospects have approximately 12 weekly training sessions. Three sessions are in the morning and organized by the school, about six are in the late afternoon or at weekends in the club, and the rest are supplementary training, which is organized under the name “basis training” and includes exercises for training balance, strength, endurance, speed, mentality and other areas that are common to many sports. Most athletes also train with the national teams. Despite little formal communication and planning, training is well coordinated due to a rooted philosophy of Norwegian kayaking, which goes back more than thirty years. This philosophy determines the focus of training, for example that condition is more important than strength and the nature of the individual training session, for example that all training should be in the form of
Test times also determine the structure of the overall week plan, for example that the week should be built around three very hard main sessions and every week should finish with a test. The philosophy leaves room for individual adaptations. In general, training ina group and riding the wave of a better paddler is considered more important than the exact content of a training session. Athletes train about half of their sessions without a coach, and the club relies on its ability to teach the athletes to do quality training on their own.

Tests are an integrated part of the weekly training plan. The purpose of frequent testing is to adjust the training, to monitor progress and to motivate the athletes to train hard. Testing also serves as mental training, which was explained by the school coach one morning after a hard test in extremely windy conditions, during which several athletes fell into the water: “Today they will not produce good test results. But it will make them tough. They will develop the will to see the training through to the end, even when the odds are against them.”

The prospects take part in 15–20 competitions every year, of which a handful are particularly important. Competitions are also important social events, where athletes from different clubs and nations meet and socialize. The junior national team coach explained the policy on selection of athletes for competitions as follows:

![Figure 2 — The environment success factors (ESF) empirical model of the Wang kayak team.](image-url)
At this Nordic Championship we are represented by 40 athletes. Norway probably could have won more medals by having fewer athletes compete in more races. But we cannot predict who will become best later in life, and we do not want to discourage anyone. The athletes learn a lot and make many friends at these competitions, and it is important to have a big cohesive group. (From observation material)

**Group Development and Culture.** *Artifacts.* Artifacts represent the visible tokens of the culture. As an example, the weight-lifting room is threadbare and basic, and most machines are homemade and constructed out of wood. On one of the machines someone has written “Pain is fun”. On a wall, a number of newspaper clips show the latest results of the club paddlers, and results from recent tests display a clear hierarchy among the paddlers. Verbal artifacts are stories told in the environment that serve to maintain the culture. One such story was about a current Olympic champion’s lack of natural giftedness and told here in the words of a prospect: “In his early years he was certainly not among the best. But he managed to train hard, stay motivated and improve a little bit every day, and today he is among the best in the world”.

**Espoused Values.** The club’s most salient value is to be an inclusive community that is open to all motivated young paddlers. The school, on the other hand, clearly espouses a philosophy of elite sport, and its homepage displays the athletes’ latest sport results. For the paddlers in the Wang-Strand training group these different values go well together. The paddlers adopt an elite mindset and are well disciplined and organized. This mindset is learned in the sport but resides within the person and manifests itself in other domains, such as school. The paddlers also manage to build and maintain an inclusive training community in which they train their hard sessions with more skilled athletes and also find time to pass their knowledge on to less skilled athletes during easier sessions.

**Basic Assumptions.** The analysis revealed that the group is characterized by a culture consisting of nine interconnected *basic assumptions* that can be grouped into assumptions about the group, the athletes, the goals and the talent development system as a whole.

As a fundamental governing principle, openness and co-operation within an open training community are at the core of the group’s cultural paradigm, a fact reflected in the first three assumptions, all relating to the group. The first assumption reads: *An open training community is a fundamental precondition for creating high level athletes*. This assumption is reflected in the way training is coordinated to allow for athletes at different skill levels to train together and in the fact that skilled and motivated athletes are allowed to take part in the training organized by the school. Closely related to this assumption is the assumption that: *Athletes must have proximal role models to aspire to in daily training*. Training is organized to allow for the prospects to ride the waves of more experienced paddlers and athletes willingly travel to the training venues of the best athletes to learn the trade. The third assumption relating to the nature of the group states that: *Successful training communities are hierarchical*. Hierarchy provides stability to the group, and the respect and recognition associated with being in the top of a hierarchy plays a part in motivating the elite athletes to include younger athletes into their training.
Two basic assumptions relate to the athletes. The first of these states that: *A versatile sport profile is beneficial to elite performance.* This assumption is reflected in the way several athletes specialize late and compete in winter sports in the off season. Diversification is supported by the coaches, as explained by the school coach:

We never tell them to focus solely on kayak. As an extreme example, we have an athlete who last year achieved good youth results in four different sports including kayak and cross-country skiing. Training hard and competing all winter is perfect for his development. He turns twenty soon and I expect he will make a choice before long. I hope he will chose kayak, but it is up to him.

The second assumption relating to the athletes regards the nature of talent and states: *Motivation, discipline and autonomy are more important than innate potential.* Although anthropometry and physical factors are important in kayak, they are not emphasized. The ability to complete hard training sessions and tests, on the other hand, is considered a marker of future excellence.

A third set of basic assumptions relates to the goals that govern daily activities. The first of these assumptions states that: *Sport is about winning, but to win you need to be patient and smart.* Daily training is competitive, and the prospects do not hesitate to admit that every training session has a winner. At the same time, winning demands patience, foresight and a focus on performance process, as explained by the head of sport:

Our goal is to be world best, and it’s true we applaud good results. But when a result comes, we help the athletes to ask themselves why the result came at this moment. What were the steps that led up to the result? We try to teach a mastery focus; a focus on the skills and qualities needed to develop in daily training rather than a focus only on results. But we do this because we firmly believe this approach yields results.

The second basic assumption about goals relates to the goals of the system and states: *An elite sport environment must have a clear elite sport philosophy.* This assumption is primarily visible in the school’s mission statements and everyday activities.

The final set of basic assumptions relates to the talent development system. The first reads: *Never change a winning system.* Any elite sport program proves its worth only when it produces results, and if it does, there is no need to change it. The final basic assumption, which is also related to the overall system, reads: *The training group must be complemented by a larger and coordinated environment.* This assumption is visible in the way clubs are open to athletes from other clubs, in the coordination of training camps between clubs, in the dialogue between school and clubs and in the coordination between coaches from school, clubs and national team.

**Individual Development.** The Wang/Strand kayak paddlers develop a number of characteristics that are helpful to them both in sport and life. Analysis of data revealed that social skills (the ability to build and maintain a functional community with athletes on very different skill levels), autonomy and responsibility (developed through often training without a coach), and a strong work ethic (always completing
their training regardless of whether a coach is present, whether it is raining, or whether they are tired) were the main categories in the individual development. The self-motivated nature of these athletes was observed during a training camp:

In the morning the athletes had done the week’s long-distance session of approximately 40 km (three hours). After lunch they competed in the basis training championship, which was harder and took longer than expected. Now they were lying exhausted on the lawn as the sun set. Weight-lifting was on the program, and the athletes slowly began to pick themselves up to go to the gym. Impressed, I asked the coach if he would ever let them take the rest of the day off. He answered that it would make no difference. As if to prove a point he tells the athletes they are free to do what they want. A few exhausted athletes go to their rooms to rest, as does the coach. The majority do a one-hour program. (From observation material)

An elite athlete summed up by saying: “They [prospects] learn to acknowledge that there are no short cuts, only hard training; no money, only sacrifices for the sport; and never enough time, only efficiency and discipline.”

**The Environment’s Success.** When the school evaluates its success, the primary parts of the equation are results, school grades and recognition. Results are most important and the school has statistics on all results created by their athletes while enrolled and also all senior results created by former students. It is important for the school to manage a successful combination of school and sport, and the school’s grade average is among the best schools in Norway. Finally, the school is recognized by its surroundings, a fact that is visible in its impressive waiting lists.

**Discussion**

The holistic ecological approach to talent development in sport emphasizes that development is influenced by the context in which it takes place (Garcia Bengoechea, 2002; Krebs, 2009). Talent development is influenced not only by the immediate microenvironment, but also by the interrelated system of microenvironments (e.g., school and club), by settings in which the athletes are not actively involved (e.g., sports federation), and also by larger cultural patterns. The results of the current study support that to understand the complex nature of talent development, researchers and practitioners must look beyond the individual athlete and include the environment in their investigations and practice.

The holistic ecological approach provides researchers with two working models that were derived heuristically and designed before the onset of the data collection. These models appeared helpful in the investigation. In terms of data collection, the models served to guide the researchers’ attention when designing instruments as well as when working in the field. This proved very important, as the all-encompassing nature of the research subject might be expected to lead to overwhelming amounts of data. In terms of analysis, the two working models proved a good foundation for presenting the case. Empirical versions of the models were adapted based on the data to capture the unique features of the environment under study. Overall, the working models served to translate the background theories into
a manageable framework to describe an ATDE and summarize factors influencing its effectiveness in the talent development task.

**Holistic Ecological Approach and Applied Work With Athletes and ATDEs**

The holistic ecological approach stimulates the sport psychology practitioner to be a researcher-practitioner. To be effective, the practitioners must collect information about their clients. They are in a sense applied researchers (Lane & Corrie, 2006), who construct problems and design interventions based on elements of theory, research and practice (Ryba & Wright, 2010). Adopting the holistic ecological approach stimulates the practitioners to broaden their view and become more aware of contextual factors, and also presents them with a key to structure this work. The two working models can direct the attention of the applied researcher and help him or her describe an environment, which is important when working with athletes belonging to the environment as well as with the environment as a whole.

Two empirical models of the Wang kayak team (see Figures 1 and 2) allow us to provide the following summary of the environment, which is (a) officially organized only as a team of prospective elite athletes but in fact centered around the relationship between these prospects and a community of former and current elite athletes; (b) officially organized as a school team but helping the athletes to focus on their sport goals; (c) a small, tight environment but open and enrolled in ‘Kayak Norway’, which allows athletes to train in any club in Norway; (d) teaching the athletes to be autonomous and responsible for their own training but supportive in helping the athletes acquire the skills necessary to take on that responsibility; (f) limited in financial resources but a world-class natural environment with a good infrastructure; (g) deeply rooted in a philosophy that demands large volumes of training but also teaches the athletes to listen to their body (h) intent on winning but acknowledging that a strong work ethic is more important than innate potential and therefore supportive of the athletes’ long-term development; (i) fragmented in that it offers training in a variety of settings but perceived as very integrated due to a strong and cohesive organizational culture; and (j) confident in the current state of affairs but willing to be uncompromising to meet future demands.

Research based on the holistic ecological approach further provides practitioners with a set of features of successful ATDEs. This list of features can help the practitioner assess the ATDE and present a strategy to increase the effectiveness of a less successful ATDE. Although more research is needed to strengthen and refine such a list, a number of features derived from this study and supported by those of Henriksen et.al. (2010a; 2010b) are worth to mention.

One such feature is the relationship between prospects and a community of more elite athletes, which was at the heart of the environment. The elite athletes were really visible as role models, and arguably training with the elite level athletes may prepare the prospects for the next phase in their athletic career and so ease their transition. A second such feature relates to the athletes’ experience of living in an integrated and coordinated environment. Where some athletes may feel trapped between conflicting demands from parents, school, and sport, the kayakers experienced an integrated set of “pulls”, which they attributed to a good coordination and communication among different components in the environment.
For example, the school teachers supported the athletes’ going to camps and competitions. A third feature is the way in which the environment allowed space for the athletes to have other personal identities than their athletic one (e.g., a student, a friend, a mentor of younger athletes) and encouraged them to develop qualities and skills applicable not only in sport but also in other spheres of life. An overall glance at the empirical version of the ATDE model clearly shows that the environment is skewed in the sense that importance was attributed to more components in the athletic domain than in the nonathletic one, which would often stimulate athletes to develop a predominantly athletic identity and thus put the athletes at risk for jeopardizing a successful transition out of elite sports (Lavallee & Robinson, 2007), but the support of multiple identities in the environment made the weighting toward the athletic domain within the structure of the environment less problematic.

As a final feature, we would like to emphasize that although the prospects were already specialized within their sport, training was still organized to allow for some measure of diversification. For example, the kayakers raced distances from 200 m to 40 km and had swimming and cross-country skiing as part of their off-season program, even entering competitions in these sports throughout their careers. This kind of sampling, undertaken to support the athletes’ development within a sport, is described by the athletes as highly motivating, and must be seen in the light of kayaking being a late specialization sport.

In sum, these features support the general notion that talent development and career development are linked in such a manner that the purpose of talent development is to build up the athlete’s resources to cope with the demands of career transitions inside and outside sport (Stambulova et al., 2009). The transition from junior to senior often involves high life stress and the risk of identity foreclosure (Lavallee & Robinson, 2007; Pummell, Harwood, & Lavallee, 2008; Lavallee et al., 1997). Athletes making this transition face demands of managing their time and energy, finding their own path in sport, managing potential relationship problems, and balancing life inside and outside sport (Stambulova, 2009). Our assessment is that the environment under consideration helped its athletes develop resources to cope with the transition demands. Coordination with school that allowed athletes simultaneously to pursue their education and their sporting ambitions minimized the risk of one-sided development. No athletes mentioned team rivalry or problems in regard to having meaningful relationships. The athletes all felt they learned to be structured in their approach to sport and life and to manage their time and energy. In the same way the environment emphasized the athletes’ autonomy and gave them a chance to find their own path in sport.

As a final practical implication, the holistic ecological approach stimulates the researcher-practitioner to investigate the organizational culture of the environment in which he/she is going to intervene. This may be done with the purpose of finding intervention strategies that match the team’s culture, or in the case of less successful ATDEs as a stepping stone for an intervention aimed at creating a culture that better promotes talent development.

In sum, the holistic ecological approach taken in this study presents a clear plea to the sport psychology practitioner not to stick with the mental toolbox when working with talented athletes but to understand and if necessary to optimize the entire environment around athletes. As a practical example, the first author finds that, after adopting the holistic ecological approach, he more often follows the
athletes to their training venue and less often invites them to his office; more often informs coaches and physiotherapists about his work with athletes; more often talks to parents, schoolteachers and other persons outside the immediate sporting environment about their role in supporting the athletes; and more often helps sporting environments investigate their own organizational culture and thereupon designs interventions to make this culture more cohesive and more conducive to talent development.

**Methodological Reflections and Future Research**

Recent reflections on the applicability of ecological approaches to sport psychology and talent development (Araujo & Davids, 2009; Beek, 2009; Krebs, 2009) have voiced a need for theory-driven research that is ecological in nature and also adapted to the world of sports. There has been a suggestion that, due to the relatively unexplored nature of the field, this research should have an exploratory rather than a confirmatory design. Indeed, the current study has been exploratory and has aimed to develop a concrete version of a theory-driven framework for the holistic ecological study of ATDEs in sport. Acknowledging that sport psychology researchers and practitioners should be able to choose from various ecological frameworks, we suggest one adequate methodological approach to the investigation of ATDEs: a case study design based on the ATDE and the ESF models; the use of qualitative methods; looking at the real-time functioning of the environment; and the use of multiple sources of evidence. We further expect that practitioners will find the holistic ecological approach practical and useful in collecting information and structuring their work with talented athletes and ATDEs once they adopt this way of thinking about athletes and their environments.

The qualitative nature and explorative design of the current study (and similar ones) also entail limitations. Particularly, it is not possible to establish a rigorous causal relationship that would allows us to point out exactly which qualities of the environment are responsible for its success. This should not be considered simply a weakness in design, but a natural consequence of the complexity of the ATDE and of the theoretical framework.

The present study, along with those of Henriksen et al. (2010a; 2010b), have investigated successful ATDEs in individual sports that allow athletes to peak late in their careers and within a Scandinavian context. Although these studies have demonstrated the adaptive power of the holistic ecological approach, especially through the transformation of working models into empirical models capturing unique features of each ATDE, we argue for further studies in different sports (e.g., team sports and sports in which athletes typically peak early, such as figure skating or diving) and various countries to determine the degree to which highly successful environments have similarities in structure, role of components, organizational culture, etc. or to make sport and context specific recommendations. A particular challenge would be to apply the holistic ecological approach to the study of environments in which senior elite athletes continually manage to produce top level results. Investigating successful elite performance environments (EPE) may reveal to what degree successful ATDEs differ in essence from successful EPEs and thus increase our understanding of the particular challenges facing athletes on the verge of a transition from junior to senior elite athlete and thus from an ATDE to an EPE. We also recommend future research
to combine a holistic life-span perspective and a holistic ecological approach, by investigating in parallel the development and transitions of individual athletes within an ATDE and how the environment develops over time to accommodate the needs of the athletes.

Finally, the perspective and the frameworks presented in this paper can also be applied to the investigation of problematic sport environments that, despite favorable preconditions, have limited success in helping prospect athletes to develop. Intervention research would be a natural continuation of such efforts. Designing a program to develop and strengthen talent development environments in sport and measuring the effects of such an intervention provides a challenge for future research and may be of great benefit to practitioners in the field.

References


