Exploring the Role of Sport in the Development of Substance Addiction

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Purpose: Potential benefits of participation in sport are widely known. However, sport participation has also been associated with risks, including consumption of alcohol and drugs and such risks may be enhanced among certain populations. The purpose of this study was to examine the possible links between participation in sport and the subsequent development of substance addiction.

Methodology: Realistic Evaluation guided the study, with data collection occurring through semi-structured interviews. Interviews were conducted on the university campus or at a residential treatment center. A total of 21 participants: 7 people who had between 3 and 29 years of sobriety, 13 people in a residential addiction treatment program, and 1 counselor.

Results: Participants were grouped according to their sport backgrounds as 1) limited sport backgrounds, 2) recreational sports, 3) competitive athletes or 4) competitive athletes whose sport was terminated. Five main contexts were identified: 1) Familial History, Stability, and Illness, 2) Perceived Acceptability of Alcohol, 3) School and Social Atmosphere, 4) Sport Culture, Demands, and Expectations, and 5) Termination of Sport Involvement. The three main mechanisms were identified as: 1) Psychological Characteristics, 2) Coping Strategies, and 3) Availability of Substances.

Conclusions: The prevalence of substance abuse in sports settings might be under-represented in extant literature. The prevalence of substance abuse in sport contexts poses heightened risk of addiction for individuals who are already vulnerable for other reasons such as the presence of predisposing behaviors, psychological characteristics, or circumstances.

Keywords: Substance use, Substance addiction, Sport, Qualitative research, Realistic Evaluation
Substance addiction\(^1\) is a widespread problem (Potenza, 2013), with over 21.6 million people age 12 years and older suffering from substance dependence or abuse\(^2\) worldwide (Substance Abuse and Mental Health Services Administration, 2013). The costs of substance abuse are substantial, totaling $39.8 billion in Canada alone, with direct and indirect costs including additional health care, law enforcement, and loss of productivity (Canadian Centre on Substance Abuse, 2006). Further, the social impact of addictions worldwide is estimated to affect seven people for each identified addicted individual (Potenza, 2013). As such, understanding how and why substance addiction develops, as well as identifying strategies to prevent substance addiction, is extremely important.

Alcohol and drug use\(^3\) is most likely to begin during adolescence (Ashtari et al., 2011; DuPont, 2000; Swendsen & Le Moal, 2012) and adolescents are also four times more likely than adults to report harm to self and others resulting from drug use (Canadian Alcohol and Drug Use Monitoring Survey, 2012). Personal harm occurs through overdose, suicide, injury, impaired development of the brain, and unsafe sex resulting in unwanted pregnancy and/or contracting HIV (Ashtari et al., 2011; Foxcroft, Ireland, Lister-Sharp, Lowe, & Breen, 2003; Grant et al., 2012). The greatest escalation of substance use occurs between ages 13 and 14, peaking around age 16 (Ashtari et al., 2011; Meier, Anthony, & Troost, 2012).

Early initiation of substance use is associated with future cognitive impairments (Potenza, 2013; Torregrossa, Corlett, & Taylor, 2011), a large number of problems in adulthood, and is

\(^1\) Substance addiction refers to a chronic dependence where use has become habitual and compulsive despite negative health and social effects (Carter & MacPherson, 2014).

\(^2\) Substance abuse refers to use that begins to have negative consequences for individuals, friends, family, or society (Carter & MacPherson, 2014).

\(^3\) Substance use refers to initial and or casual, recreational use that has negligible health or social effects (Carter & MacPherson, 2014).
Sport and Substance Use

more likely to progress to adult drug abuse (Goldberg & Elliot, 2005; Hawkins et al., 2009; Swendsen & Le Moal, 2012; Terry-McElrath & O’Malley, 2011). For example, individuals who initiate alcohol use by age 14, compared to those who wait until age 20, are more likely to face impaired health status (Foxcroft et al., 2003; Hawkins et al., 2009). Similarly, of those who reported using marijuana at or before age 14, 12.8% were classified as drug dependent in adulthood (Substance Abuse and Mental Health Services Administration, 2011). Consequently, it is particularly important to understand factors that may contribute to substance use during this critical time period.

However, early use is just one of the risk factors in the development of addiction. Other risk factors are biological vulnerability, the influence of family, times of transition, the desire to do something new or risky, and peer pressure (DuPont, 2000; Szapocznik & Coatsworth, 1999). The more risk factors that are present, the more likely it is that addiction will occur (Szapocznik & Coatsworth, 1999). Conversely, the elimination or reduction of risk factors and/or an increase in protective factors (e.g., conditions that could discourage substance use) such as personal competence, social acceptance, and family support, can help prevent addiction (European Monitoring Centre for Drugs and Drug Addiction, 2009).

Physical Activity as a Protective Factor

Engaging in various types of physical activity, including sport, is generally associated with positive health outcomes (Tassitano et al., 2010) and traditionally, health practitioners have viewed physical activity and sport participation as providing protection (e.g., reducing/preventing) against stress, depression, and drug use (Lisha & Sussman, 2010; Pichard, Cohen-Salmon, Gorwood, & Hamon, 2009). For example, physical activity has been shown to decrease many of the physical and mental health issues young people can experience, which may prevent subsequent substance use (Dunton, Atienza, Rodriguez, & Tscherne, 2011). Further, it
can enhance other protective factors such as increased social wellbeing, improved self-esteem, and better academic achievement (Moore & Werch, 2005), as well as protecting against and alleviating the symptoms of depression and anxiety (Kantomaa, Ebeling, Taanila, & Tammelin, 2008). Given that physical activity and sport participation can provide rewards such as elevating mood and decreasing anxiety, regular physical activity has been proposed as a potential strategy to reduce individuals’ desires to engage in other reward seeking behaviors such as substance use, and possibly to prevent escalation of substance use (Fontes-Ribeiro, Macedo, Marques, Pereira, & Silva, 2011; Kantomaa et al., 2008; Moos, 2007). Moreover, participation in physical activity, including sport, is gaining attention as a potential strategy for reducing substance use and as adjunct treatments for substance use disorders (Weinstock, Van Heest, & Wadeson, 2012).

**Sport as a Risk Factor**

However, the relationship between sport participation and substance use is far from conclusive (Korhonen, Kaprio, Kujala, & Rose, 2009; Peck, Eccles, & Vida, 2008). For example, although there are many potential benefits associated with sport participation (as detailed above), in some individuals who are at risk of developing addiction, certain sport conditions have been shown to encourage substance use (Goldberg & Elliot, 2005; Lisha & Sussman, 2010; Moore & Werch, 2005; Wichstrøm & Wichstrøm, 2009). Factors that appear to mediate the relationship between sport participation and substance use include the type of sport and the setting; for example, whether participation is through school or community (Taliaferro, Donovan, & Rienzo, 2010). Participants in team sports appear to be at the greatest risk (Terry-McElrath & O’Malley, 2011; McDuff & Baron, 2005) with binge drinking being more common for athletes than for non-athletes (Barry & Piazza, 2010; Lisha & Sussman, 2010).

Unfortunately, despite the evidence highlighting the potentially negative relationships between sport participation and substance use in some individuals, our understanding of the role...
activity, including sport, is being suggested as a potential strategy for limiting substance use or as an adjust for the treatment of substance use disorders, coupled with the fact that millions of adolescents worldwide participate in sport and that adolescence is a critical period for initiating substance use, understanding exactly if or how participation in sport may influence substance addiction appears critical. Accordingly, the purpose of this study was to examine any possible links between participation in sport and the subsequent development of substance addiction. Specifically, this study sought to gain insights from individuals in recovery from substance addiction into the perceived influence of involvement or non-involvement in sport in the development of their substance addiction.

**Method**

**Methodology**

The study was guided by an approach developed from Realistic Evaluation (RE), a framework grounded in critical realism, which has been used widely to understand outcomes (Pawson & Tilley, 1997). Traditionally, these outcomes arose from interventions and RE sought to understand the pathways through which these interventions influenced outcomes (mechanisms) and how context moderated these affects (Pawson & Tilley, 1997; Mark, Henry, & Julnes, 1998; Porter & O’Halloran, 2011). As with previous studies, we have applied the concepts of RE in this study to understand outcomes as they occur in the real world – via an examination of the causal mechanisms associated with substance addiction and how context modifies these (Clark, Whelan, Barbour, & MacIntyre, 2005). This is important because the incidence of substance addiction is complex and results from the reciprocal interplay of underlying biological, psychological, and social causal factors. Within this study the application of RE enabled us to explore the mechanisms of effect and context when the outcome of interest was addiction, and identify
similarities and differences between participants' experiences. Such adaptations of RE have been
used for a variety of studies in sport, including an intervention using football reminiscences for
men with dementia (Tolson & Schofield, 2012) and a case study of the social benefits of sports
playing fields for young people in two communities (Nanninga & Glebbeek, 2011).

RE focuses on two major process components; mechanisms and contexts. Mechanisms
can be either protective or enabling, and describe the steps or series of steps that bring about
change by influencing the choices that people make. That is, they are the decisions and capacities
that lead to regular patterns of social behavior (Pawson & Tilley, 1997). Contexts are the spatial
and institutional locations of social situations including the norms, values, and prior sets of social
rules that affect different individuals (Kazi, 2003). Compared to mechanisms, contexts are
broader structures or circumstances affecting populations rather than individuals (Kazi, 2003).

Our use of RE was focused on the mechanisms linking factors (sport) and the influence of
contexts leading to a known outcome (substance use and eventually addiction).

**Participants and Recruitment**

Given the target outcome being examined in this study, the population of interest was
people in recovery from substance addiction. A total of 21 people in recovery participated in this
study in two phases. Two phrases were desired because, although there is evidence to indicate
that engagement in sport is associated with substance use and anecdotally stories linking
substance use to sport are common, there has been limited investigation of the influence of sport
on substance addiction. Particularly, there has been little research from the perspective of
individuals who suffered from addictions, with the majority of research examining the likelihood
of development of addictions using quantitative approaches. As such phase 1 was conducted as a
preliminary examination of the viability of the study premise prior to visiting a treatment centre.
identified as being in recovery from substance addiction. The majority of these participants were recruited through the lead researcher’s previous connections. Specifically, six of them were known to the lead researcher through volunteer work on a committee to plan an event pertaining to recovery from addiction. We recognized the potential bias that may arise as a result of this (albeit limited) pre-existing relationship with the participants and took steps to minimize this (such as limiting any discussion about the project away from interviews). The participants’ time abstinent ranged from three to 29 years (see Table 1). Participants were sampled based only on their interest in participating in the study and their history of substance addiction and recovery; information regarding their sporting histories was obtained only during interviews. This was deemed important to ensure we did not create an artificial link between sport participation and substance addiction. We continued to conduct interviews with phase 1 participants until we had gained insights from sufficient individuals to fully examine the feasibility of the study across participants with a range of sport experiences, from recreational through to elite involvement.

Having completed phase 1 of the study, phase 2 sought to gain insights from individuals at a private inpatient (residential) substance treatment center located in western Canada. The lead researcher explained the study to the patient population in a group setting and then potential participants indicated their interest to a designated staff member who scheduled interviews for those meeting the inclusion criteria. Participants were deemed eligible to participate if they provided consent and had been resident in the treatment center for a minimum of 30 consecutive days; the minimum time in treatment deemed by the center director for participants to be ‘clean’ and stabilized. Participants were recruited based on their history of substance addiction, rather

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4 Walking, yoga, and gym sessions are a mandatory component of this program
than their engagement in sport because this study sought to examine any influence of participation or non-participation in sport on the development of substance addiction. This was deemed important to ensure that the identification of mechanisms or contexts related to sport engagement and the outcome of substance addiction was not forced. However, all of the participants had engaged in some form of sport, with their level of involvement ranging from limited or sporadic frequency to very high-level competition including professional sports.

Counselors were also personally invited to participate by the lead researcher as a means of expanding our general understanding of the role of sport in substance addiction and to triangulate insights from the patients. In total, 13 people in active recovery and one counselor were included in phase 2. The patient group included Canadians from across the country, eight of whom were men and five women ranging in age from 20 to 59 years who had resided at the center for a minimum of 30 consecutive days (the average length of stay at the center is six to eight weeks). Several counselors had agreed to be interviewed, however, logistical issues resulted in only one being available during the data collection period. See Table 1 for further details.

***** Insert table 1 here *****

Data Collection

Following approval by a University Research Ethics Board, participants for phase 1 were contacted by email or telephone. They were provided with a brief description of the research and invited to participate. All agreed and interviews were arranged. After obtaining informed consent, semi-structured interviews began with a broad question, asking participants to tell the interviewer about themselves (e.g., please can you tell me about yourself). The focus then shifted towards their engagement in sport (e.g., What was your previous experience with sport), their substance use (e.g., I am interested in knowing about your substance use, please can you tell me how it started and what influenced your continued use?) and their perceptions of any links between sport
questions, participants were asked to provide any further information on either sport or substance use. The duration of the interviews ranged from 48 to 106 minutes ($M = 64$ mins, $SD = 20$ mins).

The interviews from phase 1 were fruitful in providing data to address all areas of interest and highlighted the feasibility of examining this topic. Given the depth and detail of the stories provided by the participants in phase 1 it was decided to proceed to phase 2 of the study and subsequently to include data from both phases in the overall data set. In phase 2, the semi-structured interviews followed the same structure as those from phase 1. The duration of the interviews for phase 2 ranged from 35 to 80 minutes ($M = 52$ mins, $SD = 15$ mins).

**Data Analysis**

Immediately following each interview, the lead researcher transcribed the recordings verbatim, removed all identifying information, and initiated analysis. There is no single analytic method recommended for RE research. In fact, there is very little instruction available beyond creating a design to suit the proposed theories and the available data (Pawson & Tilley, 2004). With the goal of RE research being to identify general patterns of contexts and mechanisms, the decision was made to utilize Miles and Huberman’s (1994) data analysis procedures as these are embedded within critical realism and provide clear explanations of linking themes across participants to identify patterns. Initially lower order categories were identified, which were then grouped into higher order themes and, after much deliberation, allocated as mechanisms or contexts based on the definition of these two elements. The data were then placed within a data matrix of contexts and mechanisms to allow for comparisons across all participants. The identification of patterns across participants allowed for the development of a visual display illustrating the contexts and mechanisms for different groups of participants.

**Methodological Rigor**
To enhance the methodological rigor of this study, a reflexive journal was maintained throughout data collection and analysis by the lead researcher who conducted all of the interviews. This journal enhanced the interviewer’s self-awareness; facilitating an internal dialogue to evaluate thoughts and feelings about the information being gathered (Jasper, 2005) and helped to ensure that the emerging patterns were reflective of the data rather than the researcher’s preconceptions. Although this reflective journal was not shared with the research team, the lead researcher regularly discussed the data and emerging themes with other experienced researchers, and considered the convergence of the patterns with previous personal experiences interacting with a family member and several acquaintances (not including the participants in phase 1) in recovery from addictions to ensure that personal experiences were not being forced onto the data. Finally, data analysis began prior to completion of the data collection creating an awareness of emerging categories, which informed subsequent interviews. The interview with the counselor also provided additional understanding to the participants’ stories and allowed for examination of the emerging patterns.

**Results**

All of the participants had engaged in some form of sport and many perceived a link between participation in sports and substance use; some participants viewed substance use as an integral part of particular sports environments. On examining the data, participants were allocated into four groups based on their sporting history: 1) limited sport backgrounds, 2) recreational sports, 3) competitive athletes who continued to engage in some sport, and 4) competitive athletes whose sport participation was terminated. Group 1 included four participants who had only casual exposure to sports, an outcome that they each attributed to their family’s low socio-economic status. Three of the four were from phase 1 and the fourth was from phase 2. Group 2 included three participants who began recreational sports as young children but dropped out
participants were involved in competitive sports and their sport involvement was a very important part of their lives. Group 3 and 4 participants were very similar in their sport involvement, but the participants in Group 4 (seven in total) experienced the termination of their sporting careers/involvement whereas individuals in Group 3 continued to maintain some sport involvement.

Following the allocation of participants across groups, we then examined the specific contexts and mechanisms that appeared to influence substance use in each group. The specific contexts (e.g. broader structures/circumstances, such as values, norms, and social rules, effecting populations; Kazi, 2003) and mechanisms (e.g., individual steps/decisions/capacities that lead to regular patterns of behavior; Pawson & Tiley, 1997) that appeared to influence substance use are shown in Table 2 and are illustrated by group in Figure 1.

**Insert Table 2**

**Insert Figure 1**

**Contexts**

The contexts (i.e. circumstances) that appeared to activate the mechanisms leading to substance use were; 1) Familial history, stability, and illness, 2) perceived acceptability of alcohol, 3) school restrictions and social atmosphere, 4) sport culture, demands, and expectations, and, 5) termination of sport involvement.

1. **Familial history, stability, and illness.** The predisposition to addiction is thought to be genetic, which can significantly influence the decision to use substances, participants’ reactions to them, and the development of addiction. Genetic risk was evident in the family histories described by 19 of the 20 participants where the extent of substance addiction ranged from one parent or grandparent to multiple relatives on both sides of the family. At the treatment center
that, anecdotally, a physician on staff said that when a patient cannot describe a family member with an addiction, they have not looked hard enough.

In addition to a perceived genetic influence, participants also pointed to certain elements in their family that they thought contributed to the development of their substance addictions. For many participants, witnessing their families’ substance use (beyond alcohol) created a context where substance use could be initiated. For example, participant 3 explained his experience:

I guess it was also a bit of glamour that I seen with it [selling drugs], cause when my cousin was selling, I seen all the different girls he had, and I seen the money that he had, and I seen that cars…I seen the different cars he would have, right.

Participant 5 attributed his initiation of substance use to his desire to spend time with his mother’s boyfriend. He shared:

She’s [mom] an alcoholic so there’s lots of parties and stuff…I visited my mom, one of the boyfriends who…he was around for the longest…turns out he was a crackhead living in a crack den…so I’d rather spend time with him just doing whatever he’s doing, than not spending time with him.

Constant change or instability in the family, as pointed to by Participant 5, was also identified by some participants as contributing to substance use. For example, Participant 3’s interview began with him talking about his mother coming to take him to live with her once again, away from the home with his stepfather. His reaction to the new environment, combined with easy access to substances, led to his substance use:

It [substance use] wasn’t at school; it was actually with my own family. Cause ah…when my mom came to [province] to pick me up and bring me back to [city] … and [pause] when I was introduced to [city], not only am I a country kid introduced to the city and I'm
have no friends here; it's all brand new. It was very scary, very intimidating. And then to
find my mom’s household as soon as we walked in, it was a party house...She would leave
for days on end, she would be drinking, she’d come back piss drunk.

In addition to the fear and intimidation participants could experience as a result of
instability in family relationships, uncertainty and unpredictability associated with mental illness
was also discussed by a number of participants as contexts that encouraged their use of
substances. Participant 7, who as an adult was diagnosed with anxiety disorder and depression,
provided one example of mental illness in a family and its impact on his substance use:

…the easiest place to start with would be 13. Um, I remember the first time I used drugs
that my mother had attempted suicide the day before and had been taken away to a, the
hospital in an ambulance and was placed in intensive care and we didn’t know whether
she was going to live or die. And I was, I had to go to school. I also had to tell my
[younger] brother and sister what happened, um…

Finally, for some participants, growing up in a family environment in which they
experienced verbal and physical abuse also appeared to be a significant contributor to their use of
substances. For example, when describing why she began using substances Participant 5 said,
“…my mom was very emotionally abusive, emotionally, mentally and physically abusive to
me…” While Participant 16 shared:

Ah, I wouldn't say he [father] would get angry, but he would definitely criticize me a lot,
to where it really bothered me. Cause I was young and I wanted to be as good as the other
[soccer] players, and when he criticized me he would bring up how good the other players
were. And that’s my dad, so I took that really hard and it would make me super angry,
very angry.
Overall, the family environment described by most participants provided some clarity about the development of their substance addiction and their journeys to recovery, with multiple overlapping and interrelated factors combining to create a context in which participants, in retrospect, perceived their substance use as almost inevitable.

2. Perceived acceptability of alcohol. In addition to the genetic and family influences described above, the participants described a perception that alcohol consumption was acceptable in their homes and their society, as Participant 2 shared, … “it’s [alcohol] such a socially acceptable thing in [province], as well as with my family.” This acceptance of alcohol subsequently created an environment in which participants felt comfortable consuming alcohol, often from a young age. For example, Participant 10 was exposed to alcohol as a child, although he did not abuse it until many years later. As he said, “I had my first drinks when I was, oh probably 6 or 7, I’d have a glass of wine at dinner.” For Participant 20, her experience of drinking also started early and was accepted and encouraged by her family. As she said:

It was how was raised, I’d been drinking since I was 13, it’s normal nobody’s ever said anything to me about it, right?…This is how you live, this is life this is real, right, it’s, it’s fine. …At 12 I was actually going to this bar. And it’s funny, well not funny but it is funny, because my dad would drive me there, knowing full well that I was going to drink and get drunk and dance and so he would drive me there and pick me up at midnight.

Most of the participants perceived that alcohol was acceptable in their homes because they witnessed their parents or other family members enjoyment while using it and some were encouraged or supported to drink themselves. Having observed the acceptance of alcohol in their homes it was deemed unsurprising by the participants that it was the substance most abused by individuals.
participants describing the implicit expectation of alcohol consumption on their sports teams. For example, Participant 16 described the drinking culture in his hockey team:

For senior men’s hockey that I just recently started playing last year, um, drinking was a big part of it, actually. Like, after the games there would be a big cooler full of beer and on bus trips we’d drink on the bus the whole way back.

Similarly, Participant 20’s comments were indicative of the stories shared by many participants, when she explained, “…it [drinking] was what we did, it, it went hand in hand with baseball. You didn’t play ball without drinking, and you didn’t drink without playing ball.” Such social acceptance of alcohol not only appeared to set the stage for future alcohol use and abuse but its integration into so many facets of society subsequently created a challenge for those wanting to live without it. Overall, acceptability of alcohol, as well as genetic, and family influences were the largest contributing contexts to substance use among participants in groups one and two.

3. School and social atmosphere. Beyond the perceived acceptability of alcohol, all of the participants indicated that they were exposed to substance use (beyond just alcohol) in their school years and that, depending upon the structure and social atmosphere, school could enhance or reduce their likelihood of using substances. The positive influences (i.e., preventing or reducing substance use) of school were seen in very strict or very structured environments. Participant 10 mentioned that his boarding school environment was strict and was successful in curtailing his substance use. Another participant, Participant 8 described a school environment he attended for one term to which he attributed to his temporary termination of drug use:

And ah, everyone that I know, that has gone through it [school based outdoor education program], like, I know hundreds of people that have gone through it, everyone says the
same thing, it was the best thing ever. Everyone stopped drinking, everyone stopped.

He went on to say that upon returning to the regular school environment, he also returned to his substance using behaviors.

More commonly described were participants’ experiences of attending schools with fewer restrictions and seemingly low levels of supervision, which enabled them to begin to use substances. Participant 14 moved from a private school to a public high school and offered the following comparison:

…when I went to the high school, um, which was a public school, there was a lot more leeway and bigger classes and not as much checking in and you know, I kind of took advantage of that.

In taking advantage of this leeway, some participants sought out other like-minded individuals who were using substances, and such substance use subsequently became part of the participants’ social circles. For example, Participant 2 described the impact of new friends after moving from (a smaller, more regulated) elementary school to junior high school:

By about, I think it was, in grade 8 was the first time I had smoked pot…it was cause all the people I was hanging out with…starting in grade 8, I started hanging out with a new group of friends, the cool kids.

Consequently, within their social circles, participants perceived the use of substances as desirable in enhancing their social status and subsequently prompting their continued substance abuse:

I’m not really proud of it, but I was the one drug dealer, that was the only drug dealer that was at that high school for that whole time that I was there. So, I accumulated a lot of friends, but they weren't friends, they were more of, more ah, more associates than
made the soccer team, that’s how I made high school hockey team.

392 With the exception of attendance at private schools or the outdoor education program described
393 by Participant 8, the school culture was perceived to facilitate substance use and it was the most
394 influential context for those in Group 2.

4. Sport culture, demands, and expectations. The participants in Groups 3 and 4 were
396 influenced by the same contexts as those in Groups 1 and 2. However, they also focused upon the
397 elements of sport culture that they felt contributed to the development of their substance
398 addictions. Specifically, many participants in Groups 3 and 4 emphasized the sport culture of
399 socializing and recognition, along with the physical demands and expectations, as encouraging
400 their use of substances. Participant 16 explained:
401
402 I did a little bit of drinking as well in the Bantam level [hockey] which is well, which is
403 14, 15. …Um, I was introduced to ecstasy first by some of the hockey friends actually and
404 ah, it kinda picked up from there. I tried cocaine when I was drunk one time and ah I
405 really liked it…
406
407 He further explained:
408
409 It [substance use] was definitely passed down because you feel like you have to live up to
410 the older guys’ expectations, there's a 3-year gap in between… we’d always be invited [to
411 parties] and we really tried to live up to the, to the standards they were setting.
412
413 Encouraging substance use was not exclusively the domain of peers but included some adults in
414 authority roles in sport. For instance, Participant 1 described his experience of being rewarded
415 with substances at age 16:
...he brings a bunch of girls on the bus and drugs, you know pot, cocaine. I mean, this is, this is what they do to kids. Here you go, thanks for winning.

Beyond the reward and recognition by team officials, Participant 1 also described his sense of importance as a professional hockey player outside the team environment, “You know the lifestyle was great...people give you everything and you know you’re basically a rockstar in the community that you’re playing in.” Participant 15 had a similar experience, explaining:

That’s another thing with, with hockey is, is you're very popular, and all the girls tend to, to attract, you get attracted, or they get attracted to you because you're new in town, you're not from around there, you’re new like um.

For these participants, living this “rockstar” lifestyle often included receiving money from fans, drinking large amounts of alcohol and using substances, which consequently developed into addictions. As Participant 9 explained, even as a member of the high school hockey team, “…we always fit in at parties and stuff, like it was a hockey team right, so we were kinda like the life of the party and I, it just came hand in hand with drinking and substance abuse.”

In contrast to the partying and socializing, for many participants the physical demands and expectations placed on them to engage in certain behaviors when competing also encouraged substance use. For example, one participant attributed his substance addiction to the trauma he experienced as a hockey player. Being taller and heavier than his peers, he was encouraged to use his size as a defensive player, he explained, “…my life changed because of an incident on a hockey rink, I broke a kid’s neck.” The participant never recovered from the incident and was overcome with emotion while sharing this story.

Fighting was an issue that was problematic for two other participants who, as hockey players, were expected to fight, but were not comfortable with this. Participant 1 shared:
And I'm 16 years old and he had a beard and I looked at him like, whoosh, like "thank gosh I don't have to fight!" And he came over, and this was, ah, you know, I remember like yesterday he came over and he dropped his gloves and I just looked at him and I just feared for my life. I was just, "oh my gosh, what do I do?". Cause he, I had never fought before. And just out of fear, I just started doing and it came natural kind of to me. Like it just, I was scared, I was fighting out of fear and that was it.

This participant went on to explain that he was financially rewarded for fighting so consequently he fought despite his intense fear. However, the long-term consequences for this participant were use and abuse of substances to enable him to fight and manage the physical and emotional toll fighting took on him. Such experiences are not unique, as the counselor shared:

One of more overpopulated, the over represented pro athlete that we get in here [treatment centre], ah, is NHL enforcers that had to fight for living. The absolute fear that they describe in their sessions with me, of their absolute, overwhelming anxiety, throwing up before they were going on the ice cause they knew they were going to fight some six foot eight giant on the other side, ah and then when that fear was, the only way they could get on the ice for some of them, was to literally be high while they were playing.

5. Termination of sport participation. Generally, the participants who were competitive athletes devoted substantial amounts of time to their sports. When their participation was terminated, they reported being unable to resolve the end of their engagement and this appeared to leave them vulnerable to substance abuse. Substance use and abuse occurred to fill the void created by the loss of sport itself, their athletic identity, and for some, the loss of a connection with the team. For example, Participant 6 explained that substance use was a consequence of ending her dance involvement:
I had to go through the loss of dancing…when I became the age of 18, they [parents] stopped paying for my dance classes…for a long time it was my identity and I had to find something to replace it …

After a few years of sobriety, this participant continues to feel that she has not overcome the loss that followed the termination of her dance career and is still seeking a “new” identity.

Participant 10, who had been an international rower, described how the lingering effect of the termination of his sporting career, due to injury, contributed to his substance use. He had been exposed to alcohol from a young age but did not abuse it until an injury during high-school ended his rowing career:

…so that [injury] was kinda the end of my rowing… Yeah, I was his [coach] star, and then I just got thrown in the garbage. I basically, I don’t know, I just, didn’t want to have anything to do with anybody or anything…I remember watching the Olympics and seeing the men win the gold in the eight, and I cried…the loss of being a part of the team, a loss of a dream, cause ever since, like I said…Olympics was my goal. Ah that’s all I dreamed about when I was younger, is I’m going to the Olympics.

Although this participant drank alcohol socially prior to his career ending injury, and described consuming a couple of beers following a regatta, his alcohol use escalated when he finished high school with no life plans and his only goal no longer attainable.

For Participant 4, his injury and subsequent substance use actually occurred while attempting to become accepted by his team. He had been bullied by most of his teammates who were two years older. After he scored his first goal, two of the boys made the attempt to befriend him and he took full advantage. Without a license, he joined them riding motorcycles and suffered serious injuries putting an end to playing sports:
... And that resulted in the beginnings of my addiction because when I came out of a coma, the doctor turned around and told me outright ah, you may never walk again. And so being a hockey player from age 5 ‘til 13, to be told that, was like the end of life for me. It was ah a moment where the trauma took me into um really not seeing a future. And ah, at the same time they were pumping me full of morphine and Demerol and codeine over the period of about 18 weeks…And ah, so I’m, I wanted to be in the NHL, that was the dream…it's more the, um, loss of, of future, the way I saw it at the time.

Participant 4’s drug career progressed; he became an international drug trafficker that eventually resulted in a lengthy prison sentence.

For other participants, their substance use began while they played sport and was the eventual trigger for them ending or being forced to end their involvement with sport. For these participants, the regrets over the substance use influencing their loss of sport appeared to stimulate their ongoing use. As Participant 16 explained:

And my coach had called me and kicked me off the team, so, yeah. I missed out on a big part of what I really cared about and ah, it hurts now to think back that I chose that [substance use] over something I love to do. And it affected me like that because I was the nicest person ever when I wasn’t, like antagonized or you know, hung over or upset about something that I had done when I was drinking. And ah, yeah, it’s tough to think about.

**Mechanisms**

During the early years of their childhoods the participants in this study were not using substances but when the contexts (described above) changed or were experienced- the mechanism(s) leading to substance use were activated. Some of the initial contexts might have been conducive to substance use but without the mechanisms being activated, the behavior to use and abuse substances did not occur. A mechanism can be protective against, or enabling of,
substance use. The perceived mechanisms identified in the data include personal characteristics, coping strategies, and availability of substances. These mechanisms predominantly enabled substance addiction, only in a limited number of situations were they described as being protective.

1. Personal characteristics. The participants noted a range of psychological characteristics, specifically low self-esteem, a strong and persistent need to fit in (or strong feeling of not fitting in), and high levels of competitiveness, that they felt contributed to the development of substance addictions when in certain contexts. For example, a number of participants indicated that they suffered from low self-esteem and feelings of inferiority and that substance use helped to combat this. Participant 20 had already been using alcohol, but increased this after joining the ball team and realizing how it helped her to socialize:

…I don’t have real high self-esteem and, and I think where I felt confident was in ball because I knew I was good, and I was sought after which made me feel even better. Um, but the socializing aspect of it, you know, everyone wants to be liked and so the alcohol really helped me do that. Alcohol gave me the courage to be outgoing so that I could, you know, be accepted.

Many participants indicated that their need for social acceptance was a reason for their substance use. Several described feeling that they did not fit in with their families and/or their peers, thus making the opportunity to socialize by using substances particularly appealing. As Participant 16 explained:

So I guess when I would practice and try to get better, I was really just trying to fit in and ah, be a part of that praised group of people that the town always looked up to and ah. I always envied the better players because they got so much praise from the parents and, so
once I became a good player, I kinda acted out in their ways [including alcohol use], and I
ah picked on the people that were below me.

In addition to low self-esteem or perceived social acceptance, a number of participants
described themselves as being overly competitive, as Participant 15 shared when discussing
training while ill:

I had, that expectation that I needed to be there, so that I can be good. I need to have that,
competitiveness in me, and um, I always liked being, being a part of a team with a group
of guys or kids, you know that we had a lot of fun, but winning was everything, right?

Such competitiveness was not mentioned as the reason for initiating substance use but it
contributed to the continued use of substances or the quantity used. Further, when describing
their competitiveness and desire to win, many participants indicated that this influenced both
their sport involvement as well as their substance use. For instance, Participant 6 explained:

I was the type of a kid where, sigh, um I was very motivated and I was very driven. Um,
and I would take more, more, more, right? Kind of that addict personality, so you give
me one dance class a week and I want more.

While, Participant 16 succinctly explained:

And the competitive side of me…it’s not a healthy competitiveness…I brought that
competitiveness to my drinking. I did, ah, I always wanted to be the one that can drink
the most and the fastest and stuff like that, yeah.

Some participants, particularly those involved in competitive sport, indicated an awareness of the
similarity between their drive in sport and their substance use, as Participant 2 reflected:

But now being through all the substance abuse and, and recovery that I’ve been through, I
look at it [sports] as ah, it was definitely my first addiction. I ah see many, many, many
parallels ah, not to the extremes… something when you do substances, is the same thing
Do you know what I mean? Because I've done both and something there is the same, whether it’s dopamine or whatever the hell. Ah [pause] there’s there's there, it jives.

2. Coping strategies. When forced to deal with difficult, challenging, and often traumatic situations, participants described initially leaning on their sport participation and later substances. For instance, a number of participants managed the stress in their lives by seeking out strategies to numb themselves or escape. Sports were often used as the initial coping mechanism as described by Participant 8:

It [sports] provides ah, it provides protection at a young age, yeah, for sure. Um, I think it just masks the addiction, though. I think it just takes away the drugs but keeps everything else there all the, cause as you learn in here [treatment], the addiction is, isn’t always all about the drugs, it’s about all the, not being able to express yourself, the feelings and everything. I think it’s just; it alternates drugs for sports, like it's another escape. It's, yeah, it gets you, it helps you to avoid what the real problems that are going on in life.

Substances were then introduced either in addition to or instead of sport, often when sport alone was insufficient in helping individuals. As Participant 11 shared:

Um, my dad, [she corrected herself] my uncle passed away, alcoholic and when that happened, my addiction with the cocaine just doubled. And that continued for about a year, and I was still working, I was still doing ok with that, kept it all good on the outside. But the inside was just messed up and then my dad died…Um, so my father passed away and I turned to drugs and I couldn’t maintain the career in the fitness industry because I was doing drugs on a daily basis. And about a year, not even a year after my dad passed away, I found myself at [name], another treatment center.
cope with the situations they encountered within sport or with the physical pain. Participant 15
described a situation shared by others in the study, when realizing he could not progress with his
sports career, “… I can remember laying in bed, and, and sobbing, crying and, and thinking to
myself, well you're just not good enough. You know, you'll never be good enough and, maybe,
maybe smoking weed helped numb that.” While Participant 1 shared a different story arising
from his role as a hockey enforcer, “… I turned to alcohol for a lot of the violence or the way of
life that I lived.” Similarly, Participant 11, who initially had an eating disorder and subsequently
developed substance addictions, experienced some very negative coaching during her sport
involvement and, reflecting on these interactions, she perceived them as contributing to her
subsequent substance abuse. As she said, “Verbally abusive, psychologically abusive coaches as
you’re growing up, right. At the time you don't think of it but when I look back on it I’m like,
yup, that definitely had an impact on me, right.”

In addition to managing psychological pain, many of the participants initially started
taking drugs to cope with physical pain and this transitioned into substance use. This was the case
for Participant 8, a dirt biker, who explained, “It was just so easy to get prescriptions [dirtbiking].
With Tylenol 3s and then by the time I was 13, yeah, it was every day…” He went on to describe
how the use of prescription drugs masked the pain and led to careless riding. Although he did not
provide any details other than to say it was their reckless riding and drug use that was the cause
of his best friend’s death, it was a traumatic event for Participant 8 at age 19. Escalated substance
use was subsequently his means of coping with the emotional pain.

3. Availability of substances. The availability of substances at home, school, and in
sports environments was identified as a mechanism underpinning substance use because it
in the home:

...[friend] and I [age 10 or 12] were babysitting our younger siblings...And our parents had been drinking at their house first and then they went to a party and left us with the younger kids. And so all the bottles of booze were sitting on the table and, so we just dug our heels in and, had a few drinks...

Alcohol was typically the substance described as being available at home, whereas at school it was more commonly marijuana. Participant 2 describes both the availability and the pressure to use marijuana while in grade 8, “Oh it was, oh, the very first time, I can tell you I, I remember clear as day. Ah, total peer pressure for sure, for sure, for sure, for sure, 100 percent.” Participant 9 also felt the pressure to use marijuana when it was available at school:

It’s ultimately your choice whether you do it [marijuana] or whether you don’t. But, having it pushed in your face all the time, or being available [at school] all the time doesn’t really help your choices, you know what I mean?

Further, Participant 9 was involved in school sports and he explained how the availability of substances at school extended into school sports:

Ah, just cause everybody else on the baseball team was started doing it...so yeah, like I can’t even really remember a sport that I actually played for a frequent amount of time that I didn’t actually use a substance of some sort...

Substances were also available in sports environments outside of school, as Participant 20 recounted, “...it [drug use] was everywhere [baseball]; it was all around...you could get whatever you wanted.” Similarly, Participant 1 explained, “...when I started playing junior hockey in [year] and it [substance use] was promoted, alcohol was... I was around cocaine...I was around pretty much everything you can get your hands on.” When in the contexts described...
with some psychological characteristics and the need for a coping mechanism, provided the
impetus to take advantage of the substances on offer in their sporting environments.

**Discussion**

RE provided a methodology and structure for exploring the complex interactions of
mechanisms and contexts comprising the participants’ experiences in the development of their
addictions and their sport involvement. This was accomplished through the identification of the
main mechanisms perceived to link participation in sport to substance addiction and the different
influences of contexts on the outcome of substance addiction. Although the findings of this study
are not intended to generalize to all individuals, it is hoped that the insight into these experiences
may resonate with, and help us to better understand, how sport may contribute to the
development of substance addiction in certain individuals and consequently what may be needed
to better support vulnerable individuals. The current study provides perspectives from a broad
spectrum of individuals and experiences. Their one commonality was the development, and
subsequent treatment, of substance addictions. This is a novel approach to the problem of
substance use in sport, one that has more traditionally been examined with sport participation as
the commonality among participants (Tassitano et al., 2010; Moore & Werch, 2005; Terry-
McElrath & O’Malley, 2011). Given the choice to recruit individuals with addictions, it is
noteworthy that all the participants had some experience of sport and that sport contexts revealed
patterns of associations that might pose particular risks for certain individuals.

Highlighted in the current findings is the vulnerability of some individuals to the
development of addictions in the context of sport culture. Several participants entered sport with
multiple risk factors, including a family history of addiction, and then the sport context created
new and additional risks increasing the likelihood of substance abuse and addiction. Sport
Sport and Substance Use

participation is often accompanied by injury and pain in prompting the need to medicate (Bilard, Ninot & Hauw, 2011; McDuff & Baron, 2005). Other reasons for drug use in sport are reduction of anxiety, injury prevention, and recovery (Bilard, Ninot & Hauw, 2011). It also seems that the expectations for performance and the absence of alternative coping skills creates stress along with physical or emotional pain that pushes some individuals toward substance use, particularly where the culture is uncritical of substance use and substances are readily available (see Branch 2014).

Certainly, participants in this study came to the sport contexts with characteristics that made them vulnerable to the demands and opportunities of those contexts, similar to non-athletes (McDuff & Baron, 2005). For those who were already dealing with feelings of not fitting in for example, the availability of substances to manage their social anxiety added to their risk for developing addiction. Such situations are consistent with the literature indicating that the presence of multiple risk factors increases the likelihood of the development of substance addiction (Szapocznik & Coatsworth, 1999; Vamplew, 2005), but also highlight the specific challenges inherent within sport (e.g., managing pain and expectations to be part of a team).

The participants in Groups 1 and 2 had dropped out of sports early in adolescence, sometimes subsequent to their substance abuse. Such behavior is recognized in literature reporting that dropout rates from sports tend to coincide with increased levels of substance use (McCaul, Baker & Yardley, 2004; Moore & Werch, 2005). For example, Terry-McElrath and O’Malley (2011) found that children with delinquent histories are likely to drop out of sports before reaching high school. However, adolescents who remain involved in sports seem to be more likely to conform to the social expectations of the sport context, potentially creating vulnerability to substance use and abuse and related effects where those are salient aspects of the
conform to social expectations. As sport involvement intensified, the existence of certain risk factors in the sport context were described as contributing to excessive substance use and abuse.

The alcohol use described by some participants resulted from the social expectations of their older teammates. Such a finding is contrary to the expectation that sport involvement encourages association with same-age teammates and prevents the negative influences of older teammates (Wichstrøm & Wichstrøm, 2009). For many of the participants in our study, it was in the company of older teammates that their substance use was initiated and/or was escalated.

Further, the support and encouragement of fans and non-athlete peers was also described as influential in the escalation of alcohol use, particularly at post-game celebrations. Some of the participants who described feelings of low self-esteem noted how much they savored the recognition and popularity that accompanied their roles as hockey players (in particular). Such a finding points to the importance of ensuring athletes, particularly young athletes, are provided with education and support (e.g., performance lifestyle support) regarding managing these expectations and pressures as well as being guided to develop appropriate coping strategies. Most importantly, perhaps, this points to the critical need for an evaluation of the current culture of (certain) sports, particularly those that cater to vulnerable youth populations.

This study also highlighted the connection between sport involvement and the exposure to and use of other substances in addition to alcohol. Alcohol was only one of many substances described as being readily available in their sport environments. Taliaferro et al. (2010) indicated that marijuana and cocaine were drugs more typically used by non-athletes. However, the four hockey players described the use of cocaine as being popular on their teams, being used at parties, and subsequently becoming the drug of choice for two of them. Use of cocaine appeared to be encouraged in the lifestyle that these participants experienced as hockey players. The
existing literature suggests that alcohol is the most common substance associated with team sports (Lisha & Sussman, 2010; McDuff & Baron, 2005; Terry-McElrath & O’Malley, 2011), but the current reports suggest that other substances are more common, and for young age groups, than has previously been reported. Given this finding, it would again appear important to review what is deemed acceptable practice in this environment. Within this study, cocaine use was limited to high-level hockey players, so perhaps it is limited to certain sports. However, as more sports become professionalized at an earlier age and more young athletes are finding themselves “caught up” in a professional lifestyle and earning money, the value of performance lifestyle support and education of athletes’ support networks would seem particularly valuable.

Literature suggests that participation in sport will have a generally protective influence on substance use, both due to the activity itself and the social association with people thought to hold negative attitudes toward drug use (Chen et al., 2004; Donaghy, 2007; Terry-McElrath & O’Malley, 2011). The participants in this study provided few descriptions of positive or preventive influences of sport on their substance abuse, although it is possible that positive influences existed but that they were overridden by other factors such as heritability.

Nevertheless, the lack of positive influence is concerning given the often blanket support for the benefits of physical activity and sport participation, especially for young people. Even though not all (or even most) athletes exposed to sport environments will develop addictions, our findings point to substance abuse and binge consumption problems at various levels of sport including high-school and recreational sport. The prevalence of substance abuse in sports settings discussed by the participants suggests that the true exposure might be under-represented in extant literature and highlight the need for education and support programmes to address the challenges young athletes may be facing.
The presence of substance abuse in sports contexts poses heightened risk of addiction for individuals who are vulnerable for other reasons such as a family history of addiction, the existence of other predisposing behaviors, psychological characteristics, or circumstances (Peck et al., 2008; Szapocznik & Coatsworth, 1999). However, binge consumption poses risks to individuals who do not share these vulnerabilities. With the complexity of the patterns it is impossible to predict what exact ‘constellation’ of risk factors will lead to an addiction, but clearly the levels of substance use, abuse, and binging are of concern. Such information highlights the importance of considering the range of risk factors that influence substance addiction and ensuring that one factor, in this instance sport participation, is not considered in isolation. It is also unclear whether access to, or awareness of, better coping strategies might have served a protective effect, but is worth considering in the future.

**Limitations and Future Directions**

The participants in this study all had a substance addiction and were in treatment or recovery. Such a sample provides a unique insight into the experiences of individuals who are not often consulted. However, the results are limited to the role of sport only for those people who did develop substance addiction. It is not possible to comment on the role that involvement in sport might have on those who did not develop substance addiction, even if they were exposed to the same contexts and/or mechanisms. This gives some clear direction for future research.

Further, a purposeful sample of people with substance addictions who have been in recovery for an extended period of time or who are in treatment at a private treatment facility may have different characteristics than those who did not seek treatment or those who obtained publicly funded treatment. The participants in this study were of various ages and years of abstinence, which, while providing a broad range of experiences, may have influenced their stories. Neither of these factors appeared to impact upon the experiences of the participants or the
involvement as well as their addictions did differ, and this may have influenced their recollection.

Additionally, given the challenges of accessing this population, but the importance of including
their views in research, we did not distinguish by gender in the study. Previous literature has
indicated that substance use may differ between genders and future research should consider this..

Finally, the participants varied with regard to their sporting experiences. While this was
desirable for this study to allow for the identification of any differences based on sporting
experience, to further understand the role of sport in substance addiction more explicit focus upon
individuals who were involved a certain level of sport may be beneficial.

The current results point to several promising avenues of greater understanding of the
experiences of substance addictions and how controllable contexts (e.g., school, sports) might be
instrumentally protective or facilitative of substance abuse. Consideration should be given to how
these contexts might exacerbate existing risks within the family and other aspects of community
in relation to the development of substance addiction. Moreover, the findings point to the value
of developing and evaluating interventions to support athletes in the development of more
appropriate and effective coping skills, the integration of appropriate team building and social
activities, and the recognition and reflection on individual personal characteristics that may lead
to individuals being susceptible to substance use or addiction. Clearly, the role of sport
psychology practitioners who may be working with individuals susceptible to the substance use
or addiction appears critical, both in identifying individuals who may be at risk and also
supporting and educating athletes, coaches, and broader sport organizations regarding sport and
substance use. However, further research examining the specific strategies that may be used in
such instances are needed. That said, by providing stability, helping athletes develop effective
coping strategies, managing the influence of significant others in the athletes’ network, and
important means through which practitioners may reduce some risks.

Conclusion

This study examined the perceived role of sport involvement in the development of substance addiction from the perspective of individuals in recovery from such addictions. Data analysis identified a number of contexts (or circumstances) that may facilitate or contribute to the subsequent development of addictions. Overall, the social acceptance of alcohol within families and the participants’ social environments, as well as heritability and specific family influences appeared to have the greatest influence on the majority of participants’ substance use and subsequent addiction. However, for those individuals involved in competitive sport, the culture, expectations, and demands of sport as well as termination of sport involvement also seemed to create contexts in which substance use and subsequently addiction could develop. Within these contexts, certain mechanisms were activated resulting in substance use and subsequent addiction. These mechanisms were personal characteristics such as low self-esteem and high competitiveness, a lack of effective coping strategies, and easy access to substances. Sport participation is traditionally thought to provide protection against substance use but, although participants in this study made some positive mentions, the overwhelming contribution of sport involvement to substance use was negative for this sample. Generally, for these participants, substance use was often initiated and continued in the company of their sport teammates, with substance use including alcohol and other drugs such as marijuana and cocaine.


Donaghy, M. E. (2007). Exercise can seriously improve your mental health: Fact or fiction? 

*Advances in Physiotherapy, 9, 76-88.*


*Pediatric Exercise Science, 23, 106-121.*


Table 1. Participant Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Age</th>
<th>Time Sober</th>
<th>Main Sport</th>
<th>Level of PA or Sport Engagement</th>
<th>Drug of Choice</th>
<th>Age Abuse Began</th>
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<td>Dirt Bike Professional</td>
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<td>Mechanisms</td>
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<td>M₁ Psychological Characteristics</td>
<td>M₁₁ Low Self-esteem</td>
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<tr>
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<tr>
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<td>C₃ School Culture and Social Atmosphere</td>
<td>M₁₂ Need to Fit In</td>
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<td>C₄ Sport Culture, Demands &amp; Expectations</td>
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</tr>
<tr>
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<td>C₅ Termination of Sport</td>
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1. **Limited physical activity**

   (Participants 3, 5, 7, and 13*)

   \[ C_1 + C_2 + M_{1.1} + M_{2.1} + M_{3.1} = O \]

2. **Recreational sport as a child**

   (Participants 14, 18, and 19)

   \[ C_1 + C_2 + C_3 + M_{1.1} + M_{1.2} + M_{2.1} + M_{3.1} + M_{3.2} = O \]

3. **Competitive Athlete**

   (Participants 1, 8, 9, 15, 16 and 20)

   \[ C_1 + C_2 + C_3 + C_4 + M_{1.2} + M_{1.3} + M_{2.1} + M_{3.3} = O \]

4. **Competitive athlete followed by termination of sport**

   (Participants 2, 4, 6, 10, 11, 12 and 17)

   \[ C_1 + C_2 + C_3 + C_4 + C_5 + M_{1.3} + M_{2.1} + M_{2.2} = O \]
• Describes experiences of the development of substance addictions and sport involvement
• Realistic evaluation used to identify contexts and mechanisms of substance addiction
• All participants interviewed have developed, and subsequently received treatment for, substance addiction.
• For some individuals, the sport culture appears to support the development of addictions.
• As sport involvement intensified, the presence of certain risk factors in the sport context appeared to contribute to substance use and abuse.
• There is an apparent prevalence of substance abuse in sports settings, with alcohol only one of many substances available.