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1 Coping in High-Risk Snow-Sports: A Qualitative Exploration of Alpine Racing and Freestyle
2 Athletes' Experiences

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6 Abstract

7 This study examines how semi-elite student snow-sport athletes utilise process and trait
8 coping strategies to combat risk-taking, potential loss and trauma, and other stressors integral
9 to their sport participation. Factors influencing coping strategy preference are also explored.
10 Semi-structured interviews were used to explore ten participants' experiences; the narratives
11 were analysed using thematic analysis. Five master themes emerged from the analysis:
12 Challenges to Overcome; Taking Action; Changing Perspectives; Staying in Control; and
13 Underlying Influences. The findings highlight how participants' develop and utilise preferred
14 coping strategies, although the unpredictable nature of snow-sports can result in situation-
15 specific process coping. Findings are discussed in relation to the differences between racing
16 and freestyle disciplines.

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1 Coping in High-Risk Snow-Sports: A Qualitative Exploration of Alpine Racing and Freestyle
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3 Two prominent definitions of psychological coping exist within scientific literature;
4 the process and trait approaches. The process approach assumes individuals approach coping
5 situations dynamically, thus constantly adjusting their cognitive and behavioural efforts to
6 manage specific demands appraised as stressful, and these efforts are situation-dependent
7 (Lazarus & Folkman, 1984). Conversely, the trait approach suggests individuals do not
8 approach every coping situation anew, but utilise a preferred set of coping strategies (or
9 styles) which remain relatively fixed (Carver, Scheier & Weintraub, 1989). Coping styles aim
10 to change or reduce stressors, or manage the emotional responses elicited as a result (Lazarus
11 & Folkman, 1984).

12 Loss has been broadly defined by Harvey (1996) as a reduction in personal, material
13 and/or symbolic resources. Athletes may experience losses throughout their sporting career,
14 for example; after losing competitions, retiring from sport or during periods of injury or
15 performance slumps (Lavalley, Grove, Gordon & Ford, 1998). These losses may result in
16 athletes experiencing physical and/or psychological trauma, which may require the utilisation
17 of coping behaviours. For high-risk sport athletes, such as those competing in alpine snow-
18 sports, the consequences of their risk-taking behaviour is more likely to result in loss and/or
19 trauma to the athlete, due to the fine margins of error with potentially serious consequences,
20 leading to a higher frequency of such incidents (Flørenes et al., 2009).

21 Folkman and Lazarus' (1980, 1985) 'Ways of Coping Scale' defines two distinct
22 dimensions of process coping. Problem-Focused Coping (PFC) describes task-orientated
23 coping efforts and Emotion-Focused Coping (EFC) aims to reduce emotional stress
24 associated with a situation. A third dimension, Avoidance-Focused Coping (AFC) was later
25 developed by Endler and Parker (1990) and relates to coping efforts aimed at ignoring or

1 avoiding stressors. Carver et al., (1989) believed the 'Ways of Coping Scale' (Folkman &
2 Lazarus, 1980; 1985) to be an overly simplistic measure with insufficient grounding in
3 theoretical understanding, and contradictory to the trait approach of coping. Thus, they
4 developed the COPE Inventory, an instrument measuring 13 conceptually distinct coping
5 strategies derived from theoretical understanding (see Carver et al., 1989; Lazarus &
6 Folkman, 1984). Both the COPE Inventory and its revisions (Zuckerman & Gagne, 2003)
7 have been adapted and applied to research within sports psychology, and may be used to
8 identify which coping strategies are being utilised by athletes.

9 Athletes require strategies to cope with the everyday stressors of sporting life, such as
10 injury, conflict with coaches, performance anxiety and results compared to expectations.
11 Nicholls and Polmon's (2007) systematic review of coping in sport suggested athletes who
12 cope poorly with stress may suffer significant performance failures. Thus, the adoption of
13 successful coping strategies should ensure more enjoyable and rewarding sport participation
14 (Lazarus, 2000). The majority of studies reviewed by Nicholls and Polman (2007) concerned
15 athletes from low-risk sports (e.g. golf, athletics, ball/racket sports). Whilst most athletes may
16 at some stage be required to utilise coping strategies to combat stress related to their sport
17 participation, the stressors facing the majority of the athletes from their review did not
18 include concerns regarding life-threatening injuries or death. For high-risk sport athletes, the
19 use of coping strategies may be more frequent, to ensure effective management of potential
20 physical and psychological consequences resulting from the high-risk behaviours integral to
21 their sport.

22 Celsi (1992) suggested some high-risk sports such as mountain climbing and
23 skydiving may be understood as transcendent experiences, as participants risk severe injury
24 or death engaging in the sport. Celsi, Rose & Leigh (1993) defined feelings commonly
25 described by high-risk sport athletes, such as experiencing altered temporal states (e.g. a

1 feeling of ‘timelessness’) or a sense of camaraderie with others as belonging to this
2 ‘transcendent experience’, thus acting as a form of psychological reward. High-performance
3 skiers and snowboarders from both freestyle and racing snow-sport disciplines knowingly
4 risk injury and even death, and may use the perceived psychological benefits of the
5 transcendent experience associated with high-risk sport participation as a coping strategy.
6 However, currently no research has explored this.

7 Competitive skiing and snowboarding at an elite, or semi-elite level, does not come
8 without risks. After conducting interviews with 521 World Cup (WC) ski racers during the
9 2006-7/2007-8 competitive winter seasons, Flørenes et al., (2009) found 28% of the WC
10 alpine, freestyle and cross-country skiers interviewed had suffered at least one ‘severe injury’
11 (requiring more than 28 days absence from training for recovery). Subsequently, it was
12 suggested the number of severe injuries acquired by alpine, freestyle and snowboard athletes
13 is considerably higher compared to most other sports (Flørenes et al. 2012). Rotella et al.’s
14 (1980) report found performance benefits for elite alpine racers who adopted variations of
15 PFC-focused strategies within their skiing; thus there is some evidence suggesting snow-
16 sports athletes both require and utilise coping strategies. However, the study suffers from a
17 number of limitations. Alpine racing has changed drastically since the 1980s, including
18 significant advances in equipment and increases in speed associated with elevated technical,
19 physical and potentially psychological demands required of the athletes. Furthermore, Rotella
20 et al.’s (1980) study predates the emergence of competitive snowboarding or freestyle.
21 Subsequently, there is a scarcity of research, particularly more recent empirical evidence,
22 related to coping strategies utilised by competitive snow-sport athletes.

23 Whilst a substantial amount of research has been conducted into how individuals in
24 high-risk occupations (e.g. military, emergency services personal) utilise coping strategies,
25 much of this relates to coping *after* a traumatic experience (Bonanno, 2004). High-risk sport

1 athletes, including snow-sport athletes, cope with risk as an ever-present stressor during
2 training and competing; their experience of stress is not limited to post-injury trauma,
3 although little is currently known as to *how* these athletes experience and prepare for risk-
4 taking.

5 Whilst alpine ski racing has a long and well documented history dating back to the
6 early 1900s, competitive freestyle skiing and snowboarding first emerged during the late
7 1970s as a rejection of typical alpine skills. Currently, ski/snowboard freestyle is a collective
8 term, commonly referring to the ‘alternative’ competitive disciplines of snow-sports, such as
9 mogul skiing, slope-style (where ski/snowboard athletes complete a trick-course containing a
10 number of obstacles including jumps, rails and boxes) and free-ride (competitive off-piste
11 skiing/snowboarding). Despite the differences between these two branches of snow-sports,
12 the potential consequences of the risk-taking required by its athletes remain the same. A
13 serious crash in a high-speed alpine race can be just as dangerous (and potentially fatal) as a
14 poor landing in freestyle; therefore, both may require the use of psychological coping
15 strategies as part of the athletes’ preparation prior to engagement. However, previous
16 research such as Rotella et al. (1980) neglected to include freestyle athletes; therefore, this
17 remains a largely unexplored research area and population, lacking up-to-date research.

18 The intention of this study is to expand upon the current literature by using qualitative
19 methods to explore in depth the strategies utilised for coping with risk and other sources of
20 stress within a student snow-sport athlete population. The pre-existing literature on coping in
21 sport often neglects high-risk sport, and prior research on coping in snow-sports pre-dates
22 freestyle and may no longer be relevant to alpine racing after advances in the sport. The
23 adoption of an open, exploratory approach should allow for a thorough investigation into the
24 experiences of coping with risk-taking within competitive snow-sports, across both alpine
25 racing and ski/snowboard freestyle.

1 *Measures*

2 The interview schedule was designed to explore the research questions. For example,
3 the question ‘What stressors do you feel are a part of your sport?’ related to the research
4 question; which aspects of snow-sport participation do the athletes perceive as being high-
5 risk/stressful? ‘How do you approach a race course/run in the park?’ aimed to explore which
6 coping strategies were used by participants during their preparation. Questions that asked for
7 participants to provide examples, e.g. ‘Can you tell me about times when you felt you had to
8 cope with a high level of stress or risk in your sport? What sorts of things did you do before,
9 during and after the stressful event in order to cope with it?’ required participants to describe
10 how they had utilised their preferred coping strategies. Interview duration ranged between 20
11 – 53 minutes (mean = 32 minutes, SD = 11.24) and were recorded with participants’ consent,
12 then transcribed verbatim by the author.

13 *Analysis*

14 Thematic analysis was conducted according to recommendations by Braun and Clarke
15 (2006). An inductive analytical approach was taken, so that emerging themes would relate to
16 the data itself and avoid being theoretically driven. Phenomenological and psychosocial
17 perspectives were applied during the analysis, to uncover themes relating to both participants’
18 experiences and their own psychological development. Each transcript was individually
19 coded in NVivo (Bazeley & Jackson, 2013). Codes from all ten transcripts were then
20 organised into clusters, grouped into emerging themes and subjected to review.

21 *Results*

22 Four master themes related to the research questions were identified, including:

23 *Challenges to Overcome; Taking Action; Changing Perspectives; and Staying in Control.*

24 Upon conducting the interviews, it became apparent the exploratory nature of the interview
25 schedule allowed participants to provide responses relating not only to *how* they coped with

1 risk/stress and *what* strategies they used, but also *why* they displayed a preference for certain
2 strategies over others. Subsequently, a fifth theme emerged, *Underlying Influences*.
3 Challenges to Overcome (see Table 1).

4 The first master theme refers to sources of stress, including risks identified by the
5 athletes during the interviews. Thus, it relates to the first research question; which aspects of
6 snow-sport participation do athletes identify as high-risk and/or stressful?

7 *The Uncontrollable Elements*

8 The majority of the athletes described how facing that which is uncontrollable often
9 increased their perception of the risks involved. Variations in terrain and adverse weather
10 conditions were highlighted as being significant causes for concern, due to their
11 uncontrollable nature; ‘In Scotland I’m quite cautious because... the temperature here can
12 fluctuate so much... and it’s not a big deep set of snow, it’s often quite shallow snow and
13 horrible rocks, so I think about it quite a bit more’ (Ollie; pseudonyms used throughout).
14 Cara, like many of the athletes, emphasised the increased risk when attempting something
15 new; ‘whenever I go into a track and it looks completely different, I get a bit freaked out...
16 because I know it’ll feel completely different’.

17 Freddie described how new environments where the terrain varies from the familiar
18 heightened his perception of risk: “*So I guess going to new places especially if you’re abroad*
19 *with just... much bigger jumps or different snow conditions that is... that’s a big risk because*
20 *y’know [sic] say for example it’s icy, it’s dead fast, if it’s slushy it can go dead slow and both*
21 *can be equally dangerous.*”

22 *The Opinions of Others*

23 Many of the athletes described feeling under pressure to achieve good competitive
24 results, so as to meet other people’s expectations of their ability; ‘I guess in a... competition
25 itself, it’s erm, it can be stressful to try and get results, you feel under pressure to perform,

1 you don't want to disappoint yourself and your teammates' (Freddie). Ollie and Daisy's
2 concerns regarding the opinions of others outweighed personal injury-related anxieties:
3 *"When I'm doing race or duals I worry... I don't worry about like... the risks of like slipping*
4 *out and smashing myself. I worry because it's a team thing, and I always think about how... I*
5 *don't wanna [sic] mess it up for the other people involved (Ollie)."*

6 A general consensus was that racers (in particular ski racers), tended to be results-
7 focused and 'serious'. Heather reported how adopting a less serious approach to ski-racing,
8 which she perceived as being against the social norm for alpine racers, became a significant
9 source of stress for her: *"some people take it a lot more seriously and then they can kind of*
10 *try and make you feel bad and stuff and it can get quite catty."*

11 *Injury and Injury Recovery*

12 All participants expressed concerns related to the risk of injuring themselves or others
13 whilst participating in snow-sports. Whilst most had experienced injuries they identified as
14 being 'nothing particularly major' (Sam), often these transpired to be fractures or
15 concussions. For athletes whose injuries were more severe, the potential consequences were a
16 significant source of anxiety: *"As soon as I hit my head everything went white, and my ears*
17 *were ringing. I couldn't move anything in my body, which sucked. I was lying there... and I*
18 *thought I'd broken my back, or like... done something that was paralysing (Ollie)."*

19 For Freddie and Sam, losing potential skiing time to recovery was just as anxiety-
20 inducing as the risk of injury itself, with Sam explaining how being out for the season with an
21 injury would *"really suck 'cause I really love doing it"*. Ollie described frustration at having
22 to *"build myself back up to where I was"* after losing freestyle skills acquired pre-injury to
23 the recovery process.

24 *Finding a Balance*

1 Anya emphasised the difficulties she faced in sacrificing experiences in other aspects
 2 of life to further her racing career@ *“I have given up so much for skiing. It’s the whole... not*
 3 *going out to this party, not hanging out with friends at this point, skipping all sorts of*
 4 *weekend trips because I would go up to the mountains”*. Balancing academic pressures with
 5 training/competitions had been a cause of conflict with her coach. Ben explained his decision
 6 to focus on university over his racing career as being due to his unwillingness to take *“a*
 7 *future risk, of missing out on university, missing out on that opportunity... to risk it all... just*
 8 *to go and ski race”*.

9 ***Taking Action***

10 The second theme referred to which coping strategies participants utilised to cope
 11 with risk and stress in snow-sports, and the limitations of these strategies. Although *Holding*
 12 *Back* is an example of an AFC strategy, choosing not to act is active in itself (Carver et al.,
 13 1989); thus, it was included in the *Taking Action* master theme.

14 ***Cognitive and Behavioural Strategies***

15 Several of the freestyle athletes cited the merits of preparing ‘back-up runs’ they
 16 could switch to, were they to under/over-rotate in competition and be required to adjust.
 17 Freddie emphasised how developing a ‘contingency plan’ enables him to ‘try and kind of
 18 prepare... for as many situations as possible. So I have options’. Cara explained how she is
 19 ‘always thinking about the worst case that could happen’, to prepare for the ‘negative
 20 consequences’, with her showing particular preference for this strategy when she felt out of
 21 control. After having learnt from his experiences of being caught in avalanches, Ollie now
 22 feels *‘often I’ll plan better, I’ll think about why... how I’m going into things, how I’m going to*
 23 *tackle things and... if something did happen, what I’d do or where I’d go’*. For Ben, *‘ski*
 24 *racing was always just about trying to be as organised as possible’*. His and Anya’s planning
 25 strategies related to ensuring their equipment preparation was completed the day before

1 competition to reduce stress.

2 Many of the racers found mental imagery rehearsal to be a useful cognitive strategy in
3 competition; ‘during course-inspection and stuff I would always try and like actually like
4 picture the line and stuff and think about the course and think about where the combinations
5 were’ (Heather). Ben described mentally rehearsing specific corners of a downhill course so
6 as not to be *‘quite as surprised’* when he skied them later. Movement visualisation was a
7 common strategy amongst the freestyle athletes, often combined with watching videos of pro
8 athletes performing tricks: *“I’d say probably before I do heats in freestyle I visualise the trick
9 being (pause) as if it’s the video, as if it’s that person doing it and y’know, like they’ve done
10 it and that’s how you’d do it, but then also... like visualising like myself doing it cause then,
11 so first of all I get it in my head that that’s how you do it and then I see like, myself going for
12 it. (Jade)”*. Whereas freestylers reported using movement visualisation and imagery-rehearsal
13 during preparation some weeks before the stressful event (e.g., trying a new trick); racers
14 only utilised these strategies immediately before racing.

15 The final behavioral strategy referred to the group actively practicing their snow-
16 sports skills prior to competition. Max explained how acquiring a *‘base of tricks that I can do
17 really well’* and rehearsing them prior to competition improved his confidence; ‘I can tell
18 myself those are the ones that I’ve practiced a lot recently, I know that I’ve got them fairly
19 solidly.’ Whilst most practicing took place within a snow-sport setting, Freddie discussed the
20 merits of practicing movement off-snow, describing his process of *‘trying to watch videos,
21 trying stuff on the bedroom floor, trying to kind of go through positions that I need to be in’*.

22 *Working with Others*

23 Whilst the ski racers discussed working alongside coaches to improve performance,
24 for the freestylers, skill development often occurred in an informal *‘friendship group’*
25 environment. Sam discussed the transition from his introductory freestyle lessons to *‘just like*

1 *you and your friends helping each other out*’, and how skiing amongst his friends who were
 2 pro-skiers allowed him to ‘model’ his speed and technique from observing them. For Freddie,
 3 working as part of a group allowed him to learn from others by asking advice; *‘you get*
 4 *people who are really good at giving instructions and teaching, and if someone’s kind of*
 5 *good and explains stuff well it actually really helps*’. Cara found snowboarding with friends
 6 encouraged her to take more risks in her sport: *“I guess I’ve become slightly more willing to*
 7 *take risks, because of the kind of camaraderie of the ski club... the uni ski club’s quite*
 8 *y’know, it’s quite a peer pressure thing I guess... so I’m kinda more pressured into taking*
 9 *risks and to push boundaries”*. Daisy stated *‘having other people there is amazing for*
 10 *pushing you*’, and found having others who believed in her ability increased her confidence,
 11 resulting in her attempting tricks she had previously never considered.

12 *Avoidant Strategies*

13 Several from the group described situations where they felt they had deliberately ‘held
 14 back’ in their performance to cope with risk better. For Ben, this meant being reluctant to ski
 15 at his top speed whilst competing in Norway, as he felt the steeper and narrower slopes there
 16 increased his anxiety. Freddie described ‘putting off’ trying new tricks on holiday until the
 17 last few days to ensure he had ‘less to lose’, were he to fail in his attempts. After
 18 experiencing crashes or poor performance, Jade reported she would *‘step it back to like being*
 19 *at less risk [...] and then just build it up*’. This *‘building blocks approach*’ was also used by
 20 Daisy and Max, who emphasised the need to restrain oneself from attempting too much too
 21 soon and instead preferred to ‘gradually build it up’ (Daisy).

22 *Limitations of Strategies*

23 Several of the group suggested they only initiated coping strategies *after* a negative
 24 incident had occurred, with some of the freestylers incurring injuries after performing tricks
 25 they were confident in. Ollie stated he felt his anxiety related to potential consequences of his

1 risk taking diminished in periods where he felt confident in his snowboarding, which had on
 2 occasion lulled him into a ‘false sense of security’; ‘*if everything’s going good every time you*
 3 *go out, then there’s no need to think about the risks [...] because if everything is going well*
 4 *for you, why would the risks matter?*’ For Sam, the ability to utilise a coping strategy came
 5 after skill execution, not before, rendering him unable to prepare for risk until after he had
 6 taken it. Cara described incidents where despite having employed planning and imagery
 7 rehearsal strategies in competition after a fall to prepare for her second run, ruminating on her
 8 anxieties led to a repetition of her earlier mistakes, thus resulting in a ‘self-fulfilling
 9 prophecy’. She described how she therefore now avoids traditional aspects of on-snow
 10 preparation (e.g. course-inspection) as she feels she has proved ‘when I over-think things, I
 11 just don’t do them well’.

12 ***Changing Perspectives***

13 The theme; *Changing Perspectives* refers to the athletes’ use of strategies that aim to
 14 deliberately alter their mental attitude, so as to see things in a different, less stressful light.
 15 Like Theme two, it relates to the research questions concerned with *which* strategies
 16 participants utilise, and *how* they use them to better cope with risk and other stressors.

17 ***Accepting Risk as ‘Normal’***

18 All participants agreed that frequently confronting high-risk was integral to snow-
 19 sport participation. For the racers, extreme speeds and risk-taking in alpine racing was
 20 considered typical, with Heather describing confronting high-risks as being ‘almost like
 21 second-nature’, attributing her lack of anxiety to her expertise. Daisy expressed how risk in
 22 freestyle is simply ‘*part and parcel of it*’ and that ‘*in freestyle you expect to fall [...] it’s just*
 23 *the nature of it*’. For her, the risk of injury was acceptable, as it went hand-in-hand with skill
 24 progression. Ollie believed freestylers may become initially attracted to the sport due to an
 25 innate ability to challenge and ‘overcome those risks very quickly’, stating that ‘the people

1 who take the bigger risks are the ones who do better'. Whilst in competition, Anya described
2 deliberate cognitive attempts to reduce risk through imagining the race 'as if it's just another
3 training day', as this allowed her to 'convince myself that it's normal'.

4 *Staying Positive*

5 Positive self-talk was used as a coping strategy by many of the athletes. Cara repeated
6 a mantra of '*it will be fine, it will be fine*' to herself when she felt most at risk, and Freddie
7 emphasised a need to 'be logical' and not let his emotions take over. Anya used self-talk both
8 to reduce anxiety and inform technique, a strategy also utilised by Ollie: '*I was just like, just
9 relax... and don't blast it down because it's better to have a smooth one and not fall and miss
10 a gate than to... do that*'.

11 Daisy, Anya and Max all discussed using music to alter their frame of mind, but the
12 purpose differed. For Max and Anya, music was used as a motivator; 'to kind of get me a bit
13 more pumped up in the zone' (Max). However Daisy listened to music to '*zone out of the
14 people around me*' in competition. Meditation and relaxation are integral to Daisy's
15 preparation during competition as she finds them more 'mentally challenging'.

16 For Daisy, staying positive expresses itself as being more mentally present. Engaging
17 in mindfulness-based relaxation reduced the likelihood of her adrenaline taking over and
18 acted as a stress-reducer. Unlike her tendency to go 'back to basics' after crashing in
19 freestyle, Jade described how facing a similar situation in snowboard racing would instead
20 encourage her to '*push herself forward*' and develop a '*much more positive mindset*',
21 consciously altering her attitude and approach to the risk involved.

22 *Focusing on Enjoyment over Competition*

23 For Ben and Anya, adopting a realistic attitude about what was achievable in their
24 racing career allowed them to focus on enjoyment and assisted their decision making: "*I*

1 *started skiing 'cause I enjoyed skiing, not 'cause I wanted to win the World Cup. So it made*
 2 *more sense for me to take the risk not to ski race, and go to uni (Ben)."*

3 Daisy maintained that for her, competitive results came secondary to personal
 4 satisfaction and enjoyment; 'I think... it doesn't really matter where I come in competitions as
 5 long as I'm happy with my run and my position is like a by-product of that', explaining that
 6 her conscious attempts to uphold enjoyment and focus on being 'the best... that I physically
 7 can be, not what other people rank me as' had developed as she progressed in freestyle. Like
 8 Daisy, Ollie's focus and skill development were not targeted at competition, but rather at self-
 9 development and enjoyment. He stated: "*My ideal snowboarding is just snowboarding with*
 10 *my friends because it's... what makes me happy. But competing doesn't bother me. I don't*
 11 *mind doing it, I can quite enjoy doing it, but it wouldn't be primarily why I'm learning the*
 12 *tricks. I'm doing that for my own personal gain."*

13 ***Staying in Control***

14 The fourth theme illustrates how maintaining a sense of control affects participants'
 15 perception of risk and coping strategy choices, and its relationship to confidence.
 16 Furthermore, it highlights the relationship between the athletes' confidence and expertise in
 17 their sport, and how learning (or failing to learn) from past experiences affects their strategy
 18 utilisation and preferences.

19 ***Confidence and Locus of Control***

20 The extent to which athletes felt in control of their actions significantly affected their
 21 choice of coping strategy. Despite considering cycling to be lower-risk than skiing, Sam
 22 stated he felt '*less confident with cycling and I think that makes me take more precautions*',
 23 explaining that whilst rarely wearing a helmet when skiing, he won't cycle without one
 24 because '*I worry about it more because I'm not as good at it*'. Ben found his perception of
 25 risk and anxiety levels rose in higher-speed races, such as Super G and Downhill, as a

1 successful run required letting go of control; *'you literally just point your skis down the hill,*
 2 *and then it's up to you how fast you wanna [sic] go'*. This was not a concern in slalom where
 3 he felt he was on more 'familiar ground', stating *'I know what I'm capable of. It comes back*
 4 *again to confidence [...] you can definitely feel like you have the ability to do something, and*
 5 *most of the time you do'*. Cara described how her 'stress level is kind of correlated to my
 6 control'. She showed a preference to rely on ritualistic, superstitious coping strategies in
 7 environments where she felt a low locus of control; *'the more I have absolutely no control*
 8 *over what's going, on the more superstitious I become, because it's removed from*
 9 *practicality'*.

10 *Familiarity and Self-Belief*

11 The athletes' unanimous opinion was that competing in familiar environments
 12 reduced their perceptions of both the risks involved and their reliance on coping strategies
 13 during preparation. Heather explained how home-slopes *'don't really seem like proper dry-*
 14 *slopes'* due to their familiarity, clarifying how foreign slopes required significantly more
 15 mental preparation. Jade also felt being in *'unfamiliar territory'* meant skill progression took
 16 longer, as she had to overcome *'all the different factors that are involved'*.

17 When the athletes felt confident in their own snow-sport abilities, it reduced their
 18 sense of risk. Ollie described how he felt no anxiety in transferring his snowboarding into a
 19 racing environment, taking comfort in his ability to cope, based upon his expertise. Daisy
 20 described how waiting until she felt truly confident in her ability, helped her to master back-
 21 flips on-snow: *"I was with people I trusted who'd back-flipped off the same lip, I just felt*
 22 *confident in myself... like it just felt right? Like if stuff doesn't feel right, and if you're not*
 23 *doing the trick for you then I just don't do it."*

24 *Gaining Self-Confidence from Others*

25 Participants provided numerous examples where they felt their own confidence

1 increased after observing others. For Sam, watching pro-skiers compete in the X-Games
 2 allowed him to gain perspective on the level of risk he was taking; ‘you just kind of feel like
 3 if they can do that, then I’m sure I can just go out and do whatever it is that I wanted to do’.
 4 For Cara, joining the university snow-sports team allowed her to use others as a model for her
 5 own confidence; ‘you just think “it will be fine” and then you just kind of get on with it
 6 ‘cause you know that these people, that these kids... that they’ll end up being ok so you’ll end
 7 up ok’. Freddie found comfort placing confidence in the people who were in charge when he
 8 engaged in the high-risk activities of snowmobiling and freestyle skiing. Ollie similarly
 9 placed trust in his friend’s abilities, increasing his own confidence as a result: *“I’ll pick a line
 10 and I’ll be like, mmm I’m not really sure about that... and he’ll be like ach, it’s good it’s
 11 doable. In his eyes it’s doable, so I feel like if in his eyes it’s doable, it’s doable in my eyes.”*

12 *Gaining Expertise*

13 Heather found becoming an instructor increased her likelihood to take risks, as she
 14 believed ‘you have to be willing to take the risk yourself, to see if other people can take them
 15 too’. She felt she had to become a ‘role model’ and set an example to others about coping
 16 with risk. She described how undertaking instructor courses had increased her skiing
 17 expertise, thus improving her ability and relaxing her attitude toward risk-taking when skiing.
 18 Ben also experienced a relationship between his confidence, perception of risk and level of
 19 Expertise: *“I think the main thing for me would be the amount of experience that you have.
 20 Like, how that relates to... how confident you are, into going in to something. And the more
 21 you do it, the more your perception of risk is gonna [sic] change obviously.”*

22 *Learning from Past Experiences and Repeated Failure*

23 Several of the athletes used past experiences to guide their coping strategy
 24 preferences. Jade described an experience from her kite-surfing (where she experienced
 25 failure, maintained positivity and achieved a successful result), which she would reflect on

1 during snowboarding competitions, to inform her coping style. For Ollie, learning about the
2 negative consequences of spontaneous risk-taking resulted in him increasing his planning and
3 preparation. However, Ollie also learned through repeated failure, describing his first time
4 learning rodeo-sevens (a freestyle trick) as being *'a week of just smashing my face up, over
5 and over again until like... you actually have to stop and think about it'*. He emphasised how
6 his increasing expertise enlightened his risk-taking consideration in both snowboarding and
7 skateboarding; *'I'd just do stupid things [...] and now when I actually do it I make sure it's
8 possible. I used to just go for it'*. The athletes utilised these past experiences from both snow-
9 based and other sports, to inform their current strategy use.

10 ***Underlying Influences***

11 The final theme aimed to uncover the athletes' rationale behind their coping style
12 preferences. As previously stated, it emerged during interviews why athletes favoured
13 specific coping strategies, which factors influenced their preferences, and how their
14 perceptions of snow-sports and the differences between freestyle and racing may have
15 affected these choices. It also aimed to identify how risk and the rewards of risk-taking can
16 act as a motivation to challenge and overcome difficulties within snow-sports.

17 ***Perceptions of the Sport***

18 Many of the freestylers described difficulties associated with participating in a sport
19 where they perceived performance judgements as subjective. For Daisy, the 'cool persona'
20 required of freestyle athletes, and associated style concerns, increased her anxiety related to
21 the opinions of others. She therefore dedicated more time to coping strategies aimed at
22 alleviating these concerns. Sam described the increased need to focus on self-development in
23 freestyle versus learning from coaches in racing, influencing him to opt to develop amongst
24 friends. Ollie however found the subjective aspects of freestyle to be a stress-reducer when
25 compared to the objectivity of racing, as he perceived poor results as being a reflection of the

1 judges' opinions and not of his ability: *"When you're doing freestyle stuff it's much more*
2 *relaxed and laid back because... it's subjective. I can do something that I think is nice, but the*
3 *judges might not think it's nice... so it's like there's not nearly as much pressure."*

4 Both freestyle and racing athletes shared a perception of alpine racing being *'taken*
5 *more seriously'*, with Heather suggesting the elevated *'competitive edge'* in ski racing
6 attributed to her perceptions of the *'pretty snobby'* attitude of her fellow racers. Daisy's
7 perception of racers was of them being *'more interested in what position and stuff you came*
8 *and did you win, did you podium?'*, comparing this to the more relaxed attitude of freestylers,
9 who would instead inquire *'what's your best trick at the moment?'*

10 *Family Influence*

11 Daisy credits her childhood attempts to impress her older brother and be seen as *'just*
12 *being one of the boys'* as influencing her decision to enter the *'guy-dominated sport'* of
13 freestyle skiing. For her, *'getting bashed and bruised'* and pushing her capabilities in high-
14 adrenaline sport all contribute to the enjoyment. Daisy's pride in being seen as an equal to her
15 male counterparts was also apparent in competitive settings. Thus, hearing that she had skied
16 *'just like the boys [...] means more than getting up on the podium at the end of the day'*,
17 hence allowing her to maintain an enjoyment-focused mindset, as previously described.

18 For Cara, the influence of her father affected her choice of *'worst-case scenario'*
19 coping strategies. She described him as *'very anxious [...] always assuming that the worst is*
20 *going to happen'*, with his constant consideration of potential dangers having *'definitely*
21 *instilled that kind of anxiety in me, which is always kind of looking for the worst case'*.
22 When asked what experiences had influenced her preferred coping strategies, Heather's
23 rationale was simply that it suited her personality: *"It's just kind of the way I've always been,*
24 *I've always been from a young age that sort of like annoying, hyperactive little child [...] so*
25 *now when I get really nervous I'm just like gabbin [sic] away, chatting absolute rubbish."*

1 Jade also believed individuals' personality to be a contributing factor in coping strategy
2 preference, but stated that she felt extreme-sports participants to be similar in their approach:
3 *'everyone has the urge and the want to do it, so they must be on some sort of similar level'.*

4 *High Risk, High Rewards*

5 Freddie felt an integral part of freestyle skiing involved embracing risk, as 'there
6 comes a point where you just need to kind of try and... try and go for it'. He suggested
7 importance be placed on preparation before *'deciding that you have to go for it'*. This 'gung-
8 ho' attitude was repeated by Ben in reference to ski racing: *If you're gonna do something, I*
9 *always think you might as well do it properly. There's no point going at something if you do*
10 *it half-arsed 'cause... you might as well have not done it in the first place.'* For Max, his
11 primary incentive in entering competitive freestyle skiing was simply because he perceived it
12 as 'something that was a bit of a challenge to build upon'. This suggests overcoming risk and
13 confronting it head-on was a motivating factor for him, and he therefore consciously adopted
14 an attitude that required him to push himself.

15 Discussion

16 This study aimed to explore an under-researched area within sports psychology;
17 coping with risk in semi-elite snow-sports. A systematic search of the literature revealed no
18 prior research of freestyle snow-sport athletes' use of coping strategies. Therefore, the use of
19 a qualitative design and exploratory method was deemed appropriate to provide rich and
20 novel data. Four of the master themes that emerged during analysis related to which aspects
21 of snow-sport participation athletes perceived as stressful, the coping strategies they used
22 during preparation for risk-taking, and how they utilised them. During the analytical process,
23 it became evident that participants had provided responses related to how their perceptions of
24 racing and freestyle influenced their rationale for their coping strategy preferences, resulting
25 in an additional fifth theme.

1 The athletes described several aspects of snow-sport participation as being potential
2 sources of stress, and these formed the first master theme, *Challenges to Overcome*. Fighting
3 against the uncontrollable elements of snow-sports often increased athletes' perception of
4 risk. Adverse weather and unfamiliar terrain led to many dedicating more effort into using
5 preparatory coping strategies, in an attempt to control the uncontrollable. Injury-related
6 anxieties and concerns regarding the subsequent recovery process were identified in all ten
7 interviews. Several participants described employing preferred coping strategies used more
8 frequently during preparation after an injury. Therefore, it can be suggested that this sample
9 of student athletes both require and utilise coping strategies for risk in snow-sports.

10 The athletes all provided rich descriptions of a variety of cognitive, behavioural and
11 avoidant strategies, with many highlighting specific experiences that had helped identify
12 successful strategies, resulting in a preferred coping style. Anshel (1996) describes coping
13 styles as being reflective of an individual's tendency to respond in a predictable manner when
14 confronted with specific situations. Participants displayed clear preferences for specific
15 coping styles, thus this study demonstrates trait approaches to coping. Furthermore, many of
16 the coping strategies described by the athlete could be theoretically linked to trait approach
17 measures of coping, such as the COPE Inventory (Carver et al. 1989) and its later revisions.
18 For example, the *Changing Perspectives* master theme contained first order themes related to
19 *staying positive* and *focusing on enjoyment over competition*, which theoretically correspond
20 to the subscales maintaining optimism and goal-replacement, from Zuckerman and Gagne's
21 (2003) revision of the COPE Inventory. This suggests the athletes from the current study
22 employed trait-based strategies to cope with risk, of which some could be linked to pre-
23 existing coping measures.

24 Conversely, many of the athletes also described examples of process coping. Often
25 this 'on the spot' coping and deviation from their preferred strategies occurred in response to

1 unpredictable and uncontrollable stressors. For example, dry-slope was a predictable medium
2 for many of the athletes, who had memorised every bump and rip in the mat, with jumps
3 remaining a constant size. Thus, they usually did not utilise any coping strategies whilst
4 competing on familiar dry-slopes. When competing on snow however, many found
5 themselves constantly reappraising and adapting their coping strategy use as a result of being
6 in an environment that is constantly subject to change. For example, a sunny morning may
7 change a perfectly groomed, icy slalom course into slush, requiring rapid mental and physical
8 adjustments by the athletes to cope with the constant changes. Research conducted by Hauw,
9 Renault and Durand (2008) on the acrobatic performance of elite freestyle skiers showed
10 participating athletes reported a need to be active throughout every stage of performance.
11 They described constantly making unexpected modifications and adjustments during each
12 stage of trick execution, and relating the 'feel' of a current jump to past experiences as mental
13 preparation for coping with the risks related to landing (see also; Anshel, 1996). Therefore,
14 the findings of the current study suggest the participating athletes do have preferred coping
15 styles that have stayed relatively fixed across their snow-sports careers so far. However, the
16 unpredictable nature of snow-sports means that their preferred coping strategy may have to
17 adapt not just from day to day, but potentially from minute to minute, as conditions change.

18 Whilst the vast majority of coping styles described by athletes related to PFC/EFC,
19 under certain circumstances, some of the participants displayed a preference for avoidant
20 strategies. There were several examples of engaging in ritualistic behaviour (i.e. reciting
21 mantras, 'touching wood') to cope with an 'uncontrollable situation'. Two participants
22 described drinking alcohol before competitions to avoid focusing on competitive pressure,
23 suggesting for some of the athletes involved in the current study, moderate substance use may
24 be a preferred coping style. Roth and Cohen (1986) suggested individuals are more likely to

1 utilise PFC styles in situations perceived as ‘controllable’. The preference by some athletes
2 for avoidant coping styles may result from uncontrollable aspects of competitive snow-sports.

3 All the freestyle participants described how developing their skills as part of a group
4 significantly increased their self-confidence. Working alongside and watching others was
5 often utilised as preferred style for coping with elevated levels of risk, such as trying
6 something new. Sam described how just the act of watching pro-skiers compete on television
7 was enough for him to reduce his perception of risk in his own freestyle skiing, encouraging
8 him to push himself and try new tricks. Therefore, he gained self-confidence in his abilities
9 from observing the confident performance of others. Often, the act of gaining self-confidence
10 from others resulted in increased risk-taking behaviour. Therefore, its use as a coping strategy
11 for risk could be described as a ‘double edged sword’; whilst it reduces the perception of risk,
12 it also increases the likelihood of taking higher risks.

13 *Changing Perspectives* highlighted how the athletes felt risk-taking to be an intrinsic
14 part of snow-sport participation. For many, their considerable expertise within the sport
15 reduced their perception of risk, allowing them to perceive it as ‘normal’. A study by Albert
16 (1999) investigated how physical risk and injury in recreational cycling could be understood
17 as being constitutive of the sport itself, thus cyclists who participated normalised the risks
18 presented to them as a part of their engagement in the sport, perceiving them as ‘taken for
19 granted features of participation’. Though the athletes involved in the current study arguably
20 experience a higher level of risk within their sport participation than recreational cyclists,
21 their attempts at ‘risk normalisation’ suggest this may be a strategy adopted by athletes
22 experiencing both high and low risk integral to their sport participation.

23 The final theme, *Underlying Influences* illuminated how the perceived ‘cultural
24 differences’ between freestyle and racing may influence which aspects of snow-sports are
25 experienced as stressful, and participants’ resulting coping strategy preference. Heino (2000)

1 suggests that snowboarders view themselves as individuals who participate in the sport, not
2 for spectators or external reward, but for their own enjoyment. Snowboarding is often cited as
3 the original freestyle branch of winter-sports, and this enjoyment-focused attitude appears to
4 remain a commonality. Generally, the freestyle athletes from the current study found
5 competition stressful; the added pressure reduced their enjoyment. Thus, they tended to opt
6 for strategies related to goal-replacement, adopting the attitude that competitive results are
7 superfluous to personal satisfaction and enjoyment. This suggested lack of a ‘serious attitude’
8 towards competition has even been adopted by some of freestyle ski and snowboarding’s
9 most successful athletes. For some freestylers, the subjective nature of the sport increased
10 their anxiety related to the opinion of others (e.g. judges, spectators) – a concern rarely
11 mentioned by racers – resulting in a preference for coping strategies related to alleviating
12 these concerns. Borden’s (2001) suggestion that snowboarding and therefore freestyle)
13 culture’s attempts to consciously remove itself from the ‘straight society of skiing’ through
14 dramatic performances and a rhetoric of rebellion, may partly explain why some of the
15 freestyle athletes from the present study felt more pressure to impress others and focus on
16 aesthetics (see Edensor & Richards, 2007).

17 Almost all of the racers stressed the importance of being ‘organised’ prior to
18 competition, ensuring their equipment was ready and being fully prepared the night before
19 racing. For freestylers, the use of mental imagery as a cognitive coping strategy often began
20 weeks before an event (e.g. trying a new jump). The majority described a process of watching
21 instructional videos, observing other athletes and mentally rehearsing movement prior to
22 attempting a trick for the first time themselves. For racers however, mental imagery was a
23 more immediate part of their preparation, often only utilised after course-inspection to
24 rehearse crucial challenges just before racing. This suggests both the snow-sport race and
25 freestyle athletes in the present study utilised coping strategies for risk and other stressors,

1 and that their preconceptions of the differences between these snow-sports cultures
2 influenced coping style preferences.

3 As outlined in the introduction, there is little existing research into either coping
4 strategies used by competitors in high-risk sports, or more specifically comparisons within
5 snow-sports, between alpine racers and competitive freestylers or snowboarders. By taking a
6 qualitative approach, the present study has provided a rich, in-depth analysis informing future
7 research in this topic area. The current study explores in detail, coping strategies among high-
8 risk competitors in snow-sports, including a range of disciplines. The study finds support for
9 both the trait and process approaches to coping within the sample participants. The themes
10 identified provide novel insights both into the areas of interest outlined in the introduction, as
11 well as expanding upon the original aims of the study. Theoretical saturation was deemed to
12 have been achieved after ten participants, as decreasing elements of new information were
13 provided by participants in the later interviews.

14 Although the athletes involved in the study were considered semi-elite at university
15 level, their participation in university competitions was often considered to be ‘the beginning
16 of the end’ for their professional snow-sports careers. Furthermore, some of these athletes
17 had no competitive snow-sport experience prior to attending university, and thus had limited
18 competition experience to draw upon during interview. A limitation of the present study
19 therefore is that different findings may have been obtained from a sample of elite athletes,
20 who had elected to pursue a (semi-)professional career in snow-sports. Were the present
21 study to be repeated, the inclusion of ski and snowboard-cross athletes would also be
22 important, as like freestyle athletes, they remain an often overlooked athletic population
23 within both snow-sport and wider psychology research. Furthermore, whilst the participants
24 from the present study may be good demographic representatives of ‘student athletes’ it
25 should be noted that the findings of this study may not be representative of coping behaviours

1 in semi-elite/elite athletes, due to the small sample size and qualitative methodology used,
2 and differences between university based vs. non-university based competitive opportunities.

3 Previous research (Lavalley et al., 1998) has suggested that athletes do utilise coping
4 strategies after experiencing loss and trauma within sport. The results of this study suggested
5 that the athletes interviewed utilised both trait and process approaches to coping with
6 experiences of both loss and trauma resulting from their engagement in high-risk sport. Many
7 described an increase in utilising coping behaviours post-injury, and after a perceived drop in
8 expected performance levels. Therefore, the findings of the current study reflects the pre-
9 existing literature within the coping with loss and trauma in sport field, whilst adding new
10 understandings about similarities and differences within high-risk snow-sport contexts, and
11 how those theories relate to strategies and behaviours reported by these competitive athletes.

12 The findings from this study may guide coaches and practitioners in helping their
13 athletes develop successful strategies for coping with risk and other stressors within snow-
14 sports. Frequent utilisation of coping strategies during the participants' preparations suggest
15 that the experience of stress and need for coping strategies may be ever-present during snow-
16 sport participation, and not limited to post-injury trauma. Thus, this suggests that for snow-
17 sports athletes, the anticipation of a potential loss and/or trauma may merit the use of coping
18 behaviours. This finding could encourage increased focus into research on the development
19 and utilisation of coping strategies for risk as a preparatory measure. This may be relevant
20 beyond sports to include other high-risk activities, such as improving adaptive proficiency in
21 military personnel. Although the majority of the findings from the present study support the
22 trait approach to coping (i.e. use of preferred coping styles), it also found evidence of process
23 coping as a response to the unpredictability of snow-sports. Snow-sport athletes are an
24 interesting population for future research, as the challenges they face, provide opportunities
25 to explore how they combine and decide between trait and process approaches to coping.

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1 **Table 1: Raw Data Themes, First Order Themes and Master Themes**

2	Raw Data Themes	First Order Themes	Master Themes
3	• Weather and snow conditions	The Uncontrollable Elements	(1) Challenges to Overcome
4	• Variations in terrain		
5	• Trying something new		
6	• Not living up to expectations	The Opinions of Others	
7	• Not complying with the norm		
8	• Losing time and skills to recovery	Injury and Injury Recovery	
9	• Potentially life-changing injuries		
10	• Financial commitments	Finding a Balance	
11	• Career sustainability		
12	• Planning ahead	Cognitive and Behavioural Strategies	(2) Taking Action
13	• Mental Imagery		
14	• Practice makes perfect		
15	• Development with friends	Working with Others	
16	• Modelling for technique		
17	• Peer pressure		
18	• Holding Back	Avoidant Strategies	
19	• Incident first, strategy later	Limitations of Strategies	
20	• Injuries obtained despite confidence		
21	• Self-fulfilling prophecies		
22	• Ignoring fear	Accepting Risk as 'Normal'	(3) Changing Perspectives
23	• Confronting risks head-on		
24	• Positive self-talk	Staying Positive	
25	• Music and meditation		
26	• Pushing yourself		
27	• Setting realistic goals	Focusing on Enjoyment over Competition	
28	• Results aren't everything		
29	• Locus of Control	Staying Confident	(4) Staying in Control
30	• Familiarity		
31	• Self-belief		
32	• Modelling self-confidence from	Gaining Expertise	
33	others		
34	• Becoming a role-model		
35	• The confidence/expertise relationship		
36	• Learning from past experiences		
37	• Learning from repeated failures		
38	• Aesthetics and subjectivity in	Perceptions of Snow-Sports	(5) Underlying Influences
39	Freestyle		
40	• Competitive focus in racing		