OUTDOOR COUNCIL OF CANADA
CONSEIL CANADIEN DE PLEIN AIR
Partners In Leadership / Partenaires En Leadership

The Importance of Non-Sport Outdoor Activity: Rethinking Physical Activity Promotion

At a glance:

The health effects of sedentary behaviour costs the Canadian economy at least $15 billion per year in medical expenses and lost productivity. However, only 15% of Canadians exercise for the recommended 150 minutes of moderate to vigorous activity per week. This low figure contrasts with Norway where 30% achieve the recommended level.

This dramatic difference is largely due to Norway having an outdoor-active culture where Canada does not. Canada's indoor culture is derived from our historical relationship to the outdoor world and is regenerated by an exercise culture that largely ignores outdoor activity. The result is a conflicted 'outdoor cultural narrative' that undermines public support for all forms of outdoor activity, and so supports a vicious cycle that promotes sedentary behaviour.

We propose specific recommendations for changing the outdoor cultural narrative so as to support the generation of the pro-outdoor activity beliefs, attitudes, and skills required to transform Canada into a more active nation. These recommendations would also have positive benefits for improved education, urban design, environmental health, and poverty-reduction.

Executive Summary

The shared beliefs and attitudes of a community determine its culture. Conversely, that culture determines the intuitions the members have toward the value of pursuing a particular community objective.

Canada's historical relationship with the outdoor world is influenced by our recent frontier history where the wilderness was a place to be exploited for resources, and nature was seen as a primarily hostile force to be feared and and/or tamed. As Canada urbanized, our negative beliefs and attitudes have been complemented by the loss of outdoor coping skills. As a result, most Canadians have strong intuitional biases against public funding for initiatives that promote outdoor activity as a year-round behavioural choice.

"Northern European nations that have a culture that supports outdoor activity are as much as twice as active as Canadians."

Northern European nations that have a culture that supports outdoor activity are as much as twice as active as Canadians. Since sedentary behaviour amongst Canadians results in increased health costs, lowered productivity, and lowered quality of life, we have a national interest in transforming our own relationship with the outdoor world so as to better support outdoor activity.

When the known correlates of physical activity are assigned to one of four categories; Motivation, Access, perceptions of Safety (the MAST elements), and Training), we can observe an inter-element ecology such that increasing the supply of one element tends to increase the supply of the other three. Where a strong positive cultural narrative about a physical activity exists, as it does for sport, this ecology serves to reinforce a cultural narrative that in turn ensures that considerable community resources are devoted to providing for the supply of the four MAST elements. Conversely, where the cultural narrative is weak and conflicted, as it is for outdoor activity, the community tends to oppose the allocation of resources toward that activity. Consequently, the weak and conflicted narrative persists.

"Canada's conflicted outdoor narrative also reduces our ability to move forward on needed reforms to early childhood development, K-12 education, environmental responsibility, poverty reduction, and urban renewal"

Although this analysis focused on physical activity promotion, Canada's conflicted outdoor narrative also reduces our ability to move forward on needed reforms to early childhood development, K-12 education, environmental responsibility, poverty reduction, and urban renewal. Satisfactory progress on all of these issues would be helped by a more positive, truthful, and coherent cultural narrative concerning the outdoor world, both urban and wild.

Understanding how exercise promotion is directly connected to our cultural narratives allows us to identify interventions that will serve to kick-start the development of a stronger pro-outdoor ecology of MAST elements that will in turn strengthen Canada's Outdoor Cultural Narrative and so transform Canada from an indoor-sedentary culture into an outdoor-active one. Specific recommendations for various stakeholders are provided.

Introduction

Only 15% of Canadians achieve the recommended physical activity level of 150 minutes of moderate to vigorous activity (MVA) per week, and only 1/3 of these do so through the recommended pattern of at least five days with 30 minutes of MVA per week (1). The health effects of sedentary behaviour is estimated to cost the Canadian economy at least $15 billion per year (2,3,4). Given the strong association between physical activity and health outcomes, we have compelling reasons to find ways to increase physical activity levels, but this is proving very challenging.

There are many correlates with activity levels, but these correlations are generally too weak to be effective by themselves (5). Notably, the intention to increase activity is only weakly associated with an increase in activity (6).

It may be more effective to consider that these correlations exist within an ecology of factors, and that an environment that increases the supply of many exercise-promoting factors will be more successful than a change in any one factor alone (7).

In particular there is an emerging consensus that urban re-design is required to support the active lifestyles required to achieve significant progress (8). These redesigned environments promote physical activity primarily because they promote active transportation over mechanized transportation for adults, and outdoor over indoor play for children. Improved accessibility to active transportation options for older adults prolongs late-life activity and independence. It is notable that cultures that have a strong pro-outdoor activity culture exhibit higher activity levels than do Canadians (9). However, there is considerable public resistance in Canada to policies that promote active transportation.

"Canadians inherit a frontier history that conceptualizes nature as an inspiring but hostile force to be overcome and exploited for its resources."

Canadians have a strong romantic relationship with nature, but also inherit a frontier history that conceptualizes nature as an inspiring but hostile force to be overcome and exploited for its resources.

This paper explores the intersection of 'cultural narratives' about exercise with the ecology of physical activity promotion.

Generation and Regeneration of a Cultural Narrative

> A 'Cultural Narrative' is an interrelated set of beliefs and values shared by a community about an important topic. This narrative will be associated with specific words or phrases such that the use of those words or phrases will invoke the complexities of the narrative for the audience. This invocation provides guidance for personal and community action with respect to that topic.

The world is extraordinarily complex and since we have bounded rationality, we are very constrained in our ability to understand that complexity (10). In order to function effectively, we are

required to make many assumptions about the world. One manifestation of this assumptive process is our intuitive use of heuristics that enable us to focus on the most relevant information and quickly draw conclusions, without having to work through everything from first principles (11,12).

Cultural narratives are a form of heuristic that help us navigate the complexities of social behaviour (10). A robust cultural narrative will always concern some matter which has considerable importance for the daily lives of the community. It will contain complex assumptions (beliefs) about how the world works, and will engage positive or negative attitudes toward the subject matter of the narrative (13).

The existence of a cultural narrative is indicated when the assumptions associated with the narrative can be activated in the minds of the audience by the use of key words or phrases. For example, enthusiastic public support can be enlisted in Canada for projects that promote 'Freedom', 'Democracy' or 'Sport' by associating these words with a project without having to explain in detail why they are worthy of public support (13).

These are examples of 'strong' and 'positive' cultural narratives. Conversely, words like 'Fascism' or 'Extremist' invoke strong but 'negative' cultural narratives and can be used to rally opinion against a proposition.

Some cultural narratives, such as those associated with immigration or outdoor activity, are 'weak' or 'conflicted' because the community holds conflicting beliefs about, and attitudes toward, the subject of the narrative. Invoking a weak or conflicted narrative has the potential to trigger both positive and negative reactions from the audience, or even within the mind of a single individual.

Public support for a project associated with a conflicted narrative cannot be engaged by invocation of the narrative alone. The proposer will have to provide supplementary argumentation and possibly fend off counter-claims from competing groups. This complicates the process of engaging public support, and in a competitive environment this may well be fatal for the project.

Cultural narratives are influenced by both social activity and by non-social (i.e. material) causal factors (14).

Social factors include influence by observed behaviour (social proof), and through the telling of stories about the subject of the narrative (15). These stories may be as complex as an academic discourse about the value of an activity, or as superficial as saying 'sport promotes character development' that invokes that deeper analysis (14). No matter the depth, or even the truth, of the stories told, each telling affirms the importance of the subject. To the degree that a story conforms to the dominant version of the narrative, the story strengthens it. Similarly, observed behaviour that conforms to the narrative also re-affirms it. Consequently, the cultural narrative shapes the beliefs and attitudes that are central to motivating individuals to behave in particular ways. Those behaviours, verbal and otherwise, re-create the cultural narrative in turn.

Figure 2: Mutualism between Motivation and Culture

Cultural narratives are also rooted in causality because they must speak to the lived experiences of the audience, and these experiences are strongly influenced by the causality of the events that each individual has personally experienced (14).

However, the conclusions we draw from our lived experiences are also strongly influenced by the cultural lens through which we interpret them, both rationally and intuitively. (16) The power of that cultural lens to influence outcomes should not be underestimated. Not every culture, for example, venerates democracy or freedom, or condemns fascism or extremists. Thus, the existence of a strong narrative neither confirms nor denies the truth claims of the narrative.

A characteristic of strong narratives is that discordant voices struggle to be heard, or may even be actively suppressed (17). The existence of a strong narrative, then, indicates that there is a constituency that not only benefits from the strength of the narrative but is motivated and able to defend that narrative from detractors. Thus, strong cultural narratives can create a 'conventional wisdom' that prevents a community from recognizing the truth of a competing narrative in ways that delays the community's ability to further its own interests (18).

By contrast, a weak and conflicted narrative lacks a dominant group that is able to define and defend the narrative. Consequently, groups within the culture who associate their interests with different and conflicting threads within the narrative find themselves in conflict as they seek to propagate their version of the truth (19).

"conflicted narratives can also disable a society from making the decisions required to achieve goals that the society agrees are worth achieving"

This discordance can be evidence of a healthy discourse about complex matters. However, conflicted narratives can also disable a society from making the decisions required to achieve goals that the society agrees are worth achieving. This can occur because the negative threads in the fractured narrative are easily exploited by dissenting voices that invoke a competing and stronger narrative. Thus, the strong narrative around car culture (which supports the interests of powerful industrial and construction industries) successfully demands that public investment in urban development should be structured to support car safety and mobility, as opposed to supporting safe active transportation and safe environments for children to play. Canadians would be better served were this otherwise.

One major reason for the triumph of car culture over sustainable development for healthy cities (economically, environmentally, and for individuals) is the weakness of the cultural narrative regarding the outdoor world. The intuitions Canadians have concerning their preferences for motorized transportation over active transportation are a direct result of their lived experiences with respect to the outdoors as interpreted though our outdoor cultural narrative.

The Development of the Canadian Outdoor Narrative

"In the absence of organized interest groups that can define a positive narrative for outdoor (physical) activity, we have allowed the outdoor narrative to develop randomly"

Both Sport and Gym-based activities support a wide range of non-profit and for-profit organizations who have a vested interest in promoting the strong narratives that support these activities. In the absence of organized interest groups that can define a positive narrative for outdoor (physical) activity, we have allowed the

outdoor narrative to develop randomly. While there has always been a minority of primarily white and middle- or upper-class Canadians with strong attachments to all-season outdoor activity, the dominant North American narrative has been shaped by our frontier experience (20).

For frontier Canadians, nature was primarily a hostile force to be overcome, and outdoor activity was primarily 'work'. As we have urbanized, this historical relationship has encouraged us to embrace 'convenience' lifestyles that favour sedentary and indoor behavioural choices over outdoor and active ones (21).

To the extent that there are influential 'outdoor' communities, they tend to be in conflict. At the risk of over-simplification, the environmental movement, much of which is sedentary, is primarily concerned with defending the integrity of the environment from the negative impacts of human activity including physical activity. The other influential outdoor community is a primarily 'blue collar' constituency that enjoys the outdoors with motorized assistance in ways that reaffirm the frontier narrative of nature as a beautiful but hostile force with which our primary relationship is one of domination and exploitation (20).

The heavily politicized nature of the debate makes it hard for many environmental activists to see the common interests they have with the promotion of outdoor activity, even though the literature clearly shows that the barriers that prevent, and the strategies that promote, the love of nature and the love of outdoor activity are essentially common to both (22)

This simplistic characterization overlooks the fact that there is considerable diversity within these communities and that some individuals identify with two or more of them. There is also growing acceptance within each community for some of the truth statements made by the other (23). However, for the purposes of this discussion, the conflict between the narratives promoted by these constituencies has helped prevent the development of a more coherent outdoor cultural narrative.

The primary focus here is how the fractured outdoor narrative is impeding our ability to increase physical activity levels amongst Canadians. The thesis to be presented is that our conflicted narrative is preventing us from investing properly in outdoor activity promotion and that lack of investment is regenerating the conflicted narrative.

"our conflicted outdoor narrative is preventing us from investing properly in outdoor activity promotion and that lack of investment is regenerating the conflicted narrative."

Before examining ecology of physical activity promotion, it will be useful to restate four of the themes discussed above concerning the generation and maintenance of strong cultural narratives, which are:

1. Experienced truth: The narrative is rooted in lived experiences where citizens experience the truth claims of the narrative as having validity.
2. Invested community: The narrative serves the interests of a constituency that has the will and capacity to shape the narrative.
3. Telling the narrative: Beliefs and attitudes are created and regenerated by repeated storytelling that argues the 'truth' of the narrative and attempts to prevent the establishment of a counter-narrative.
4. Moral Guide: The narrative guides decision-making by acting as a heuristic that guides how the community should allocate resources to meet community goals.

Physical Activity Promotion

Definitions:

> **A Sport** is a physical activity where the various participatory activities are directed at achieving inter-person or inter-team competitive success, and/or competition is an important reason for participation.
>
> Gym-based Activities are any non-sport physical activities that are primarily practiced in an indoor space.
>
> A Non-Sport Outdoor Activity is any physical activity practiced outdoors where participatory activities are not primarily directed at competitive success. Many non-sport outdoor activities can be practiced as a sport. People self-identifying as participants in a non-sport activity may occasionally compete with others but that is not the primary or essential reason for regular participation.
>
> The Law of Diminishing Returns states that if increasing amounts of a variable factor are applied to a fixed quantity of other factors the increment in total output will increase at a declining rate.

At least 64 factors have been shown to influence physical activity. However, none have been shown to be more than a weak determinant physical activity at the population level (5). These correlates are not independent factors and there is growing agreement that they need to be seen as part of an ecosystem the either supports physical activity or does not.

Definitively defining such an ecosystem would be extraordinarily complex. However, we can observe that the factors tend to fall into broad categories and that defining the relationship between these categories will be a much easier project.

Factors could no doubt be categorized using a number of strategies. However, if we start from an ontological perspective, a tripartite division that captures every factor presents itself quite easily.

The first division would be between the factors that pertain to 'the individual' and those that pertain to the 'world outside the individual'. The second division would be within the individual and separates those factors that apply to the 'motivation to participate' from those that apply to the 'knowledge and skills required to participate'.

While this tripartite division can capture all the factors associated with physical activity promotion, one last division should be made so as to capture a particularly important aspect of physical activity which is the perceived safety of participating in any particular activity.

Thus the four factor groupings that form the ecosystem 'elements' are Motivation, Access, Safety, and Training, or 'MAST' elements. Their approximate content is described in Table 1.

M	Motivation (Beliefs and Attitudes): To be active a person must believe that a physically active lifestyle is possible for them (self-efficacy); they must believe that the rewards of physical activity are worth the effort; and they must have a positive attitude toward the physical activity in question.
A	Access: To be active, the person must have access to key resources external to themselves. Access is mediated by elements like cost, proximity to facilities, ease of organization, availability of co-participants, access to appropriate equipment, etc.
S	Safety: All behavioral choices incur costs and confer benefits. Physically active people receive great health benefits, but risk the chance of injury. As the perceived injury risk for an activity type increases (i.e. safety decreases) the chance of participation decreases.
T	Training: To participate in an activity, a person must have sufficient training. This training includes physical skills like 'bike-riding skills', and psychological elements like knowing how to ride safely in traffic, or how to dress for the weather.

Table 1: The MAST Elements

Physical Activity and the Individual: The Personal Ecology of the MAST Elements

"to pursue an active lifestyle a person must possess all four in sufficient quantity to make active behaviour a preferred choice over sedentary behaviour"

It is intuitively obvious that absence of any one of the 'MAST' elements will prevent an individual from being active. That is, to pursue an active lifestyle a person must possess all four in sufficient quantity to make active behaviour a preferred choice over sedentary behaviour.

Perhaps not so obvious is that the MAST elements are in an ecological relationship such that once the individual becomes active, an increase in the supply of any one element will tend to result in increases in the supply of other three since:

Increased Motivation:

- Is directly associated with increased participation which is associated with the development of skill and knowledge (26).
- Promotes preferential allocation of resources to overcome access barriers since access barriers are perceptually lowered.

- Results in 'normalization' of risk that results in increased perception of safety, even if objective safety is unchanged (25).

Improved Access:

- Includes access to safer facilities
- Lowers the amount of motivation required to participate (28).
- Increases likelihood of accessing required skills and knowledge.

Perceptions of Safety:

- Increases efficacy of existing motivation by lowing the level of motivation required to participate (29,30).
- Promote self-efficacy leading to more effective training (26).
- Increases range of facilities considered safe enough for participation.

Increased Training:

- Includes knowledge about how to access resources and results in improved access to resources through access to social resources (e.g. more likely to play, or be selected for team).
- Improved knowledge of and ability to manage safety (26).
- Strengthens motivation through improved self-efficacy and inclusion into pro-sport culture (27).

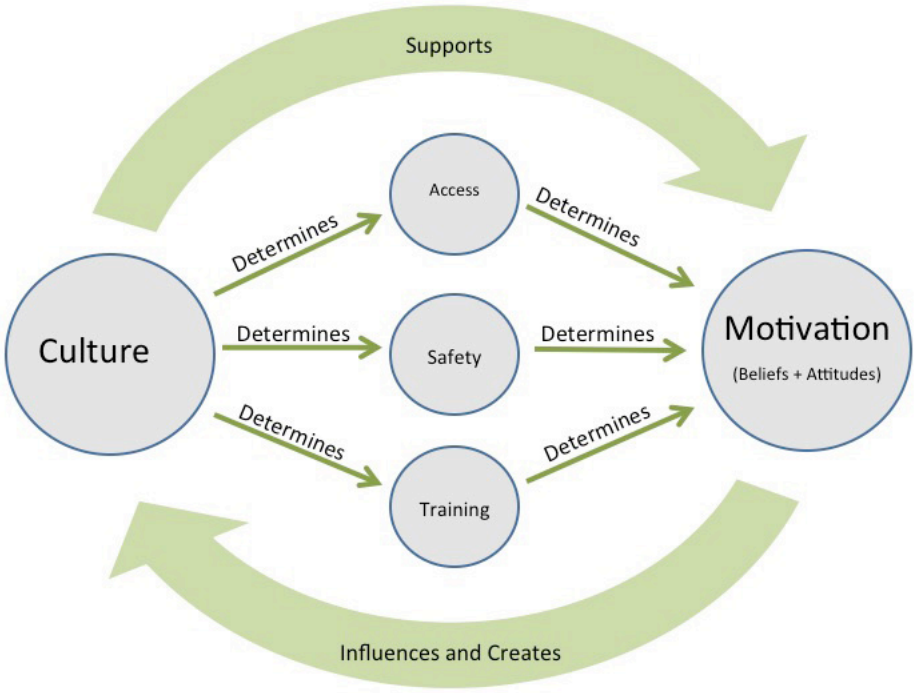

Figure 1: MAST factors are co-dependent.

Implicit in the ecology of the model are two opposing trends:

1. Any increase in a MAST elements tends to increase participation, and increased participation tends to increase the supply of MAST elements. For the individual, this virtuous cycle only happens if the MAST elements are in sufficient supply for physical activity to become a behavioural choice.
2. The law of diminishing returns applies so as to create limits to the activity level through two related processes:

   a) Participation in physical activity incurs both costs and benefits. As physical activity levels increase, the rate of increase of the benefits (as perceived by the participant) declines while the rate of increase of costs accelerates as fatigue and probability of injury increase.

   b) A psychologically healthy individual seeks a balance of experiences and the perceived value of those experiences increases with scarcity. The net benefit of increasing the resources invested in physical activity must be balanced against the lost opportunity cost of experiences forgone.

Scaling Up MAST

The MAST model describes the ecology of groups of factors (the MAST elements) that are associated with physical activity at the level of individual behaviour. The causal explanations for the MAST ecology are argued at the level of the individual experience, even though the evidential basis for the ecology has been primarily established through analysis of aggregate data. This inductive leap relies on the assumption that the relationships observed at the aggregate level are accurate reflections of causal relationships that exist at the individual level.

The distinction between the individual and the collective is relevant because individuals differ from each other such that two individuals subjected to the same external (circumstantial) conditions will typically have different activity levels because of their individual physical and psychological differences (31).

We can only be successful in increasing physical activity at the population level if our strategies increase the supply of MAST elements to those who are currently inactive, or at risk of becoming inactive. The initiatives that achieve this will recognize both the particular circumstances that sedentary and at-risk populations are in, and also the diversity of differences within the population, whether they be inherited or shaped by past experience.

Of particular relevance to this discussion is how individual differences influences the motivational relationship any one individual has with a particular activity, and how that motivational relationship creates a chain of events that lead to either an active or a sedentary lifestyle.

"Our failure to provide the MAST elements required to support outdoor activity options is major factor in preventing 85% of Canadians from meeting activity guidelines"

Quite obviously, that chain of events is preventing 85% of Canadians from meeting activity guidelines. A major factor in this deficit is our failure to provide the MAST elements required to support outdoor activity options.

Put another way, Canadian investments in Access, (perceived) Safety, and Training are primarily directed

toward sport and gym-based activity, and while this strategy is effective in supporting 15% of adults to be active at the required level, there is minimal room for improvement because there are inherent limitations to the activity-promoting potential of these activities that are rooted in individual differences.

The evidence suggests that non-sport outdoor activity has considerable potential to increase activity levels, if we can overcome our cultural biases against it. Norway has a strong outdoor narrative that is characterized by a cultural narrative about 'Friluftsliv' (Fresh-air-living) (32). Comparable studies conducted in Canada and Norway that objectively measure physical activity levels suggest that 15% of Canadians practice moderate to vigorous activity for 150 minutes per week as compared to 30% of Norwegians (9).

Canada and Norway have very different cultural histories with respect to the outdoors, but cultural narratives change over time. By understanding how Canada's cultural narrative intersects with our current methods for physical activity promotion we can discover strategies that will help bring the narrative into better alignment with needs.

Designed for Mediocrity: MAST and the Canadian Bias in Physical Activity Promotion

Culture (C) influences the availability of activity specific MAST elements to create a 'C-MAST' meta-ecology (Figure 3). For example, the strength of the sport narrative ensures robust support for MAST elements required for sport participation, and in turn is supported and regenerated by those MAST elements. Thus:

Experienced truth: Since most people have played a sport as a child, they have experienced for themselves the central truth claims of the narrative.

Invested community: The sport community is both large and highly organized. Many individuals make their living through sport and non-professionals make significant commitments of time and resources.

Telling the narrative: The narrative musty be told loudly and often in order to harness the resources required to supply MAST elements required to support sport. Additionally, the sport narrative is interwoven with other positive cultural narratives which ensures multiple venues for story-telling.

Moral Guide: As evidenced by the enormous support the sport industry enjoys, the narrative is serving as an effective guide to public and philanthropic resource-allocation in a competitive environment.

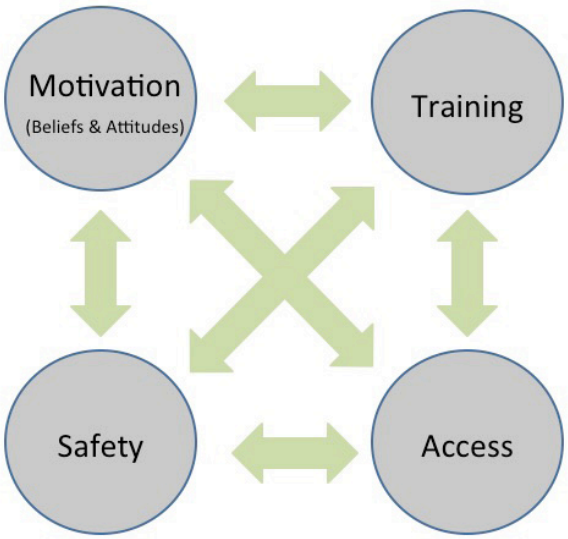

Figure 3: Interaction of MAST Elements and a Cultural Narrative

A similar ecology supports the narrative around gym-based activity. Most children experience these types of activities; there is an invested community in both the for-profit and public-service sectors; the story is extensively marketed; and the story is interwoven with influential fashion, celebrity, and weight-loss narratives. In addition to for-profit investment, the narrative is strong enough to ensure that public resources flow to subsidize recreation centres with extensive gym facilities.

This gym-based narrative is less persuasive than the sport narrative because the truth claims are less compelling; it lacks the dramatic and character-development aspects of the sport narrative; and for most individuals, the lived experience of participation fails to develop positive attitudes toward gym-based activities because they experience little intrinsic pleasure in participation. This latter failing is associated with inherited personality factors (33,34).

The C-MAST ecology explains why a strong cultural narrative fails to develop around non-sport outdoor activity

The C-MAST ecology also explains why a strong cultural narrative fails to develop around non-sport outdoor activity:

- Few children experience positive or well-designed non-sport outdoor activities, receive age-appropriate skill and knowledge training, and are not provided with even the minimal level of access (such as appropriate clothing). Most children are encouraged to view outdoor experiences, particularly adventurous experinces as dangerous. Without a positive 'lived experience' to guide them, they easily adopt negative beliefs and attitudes.
- There is an outdoor 'industry', but it is highly fragmented and under-resourced. This is a direct result of most existing human-powered outdoor activity taking place without the benefit of organizational support. 'For-profit outdoor activity business' is almost a contradiction in terms except for adventure tourism.
- The fragmented outdoor-active community is not organized or influential enough to shape the narrative for the benefit of the wider community. Consequently, the shaping function is largely managed by the media that prefers to publish material about extreme activities and/or sensational events that reinforce the narrative of nature and outdoor activity as a dangerous.
- The weak outdoor cultural narrative ensures that few resources are allocated to providing the MAST elements required to support outdoor activity.

The Case for Reshaping the Outdoor Cultural Narrative

Reshaping the outdoor narrative will be a challenging objective to achieve, but if we are serious about tackling physical inactivity, we must accept that challenge

Reshaping the outdoor narrative will be a challenging objective to achieve, but if we are serious about tackling physical inactivity, we must accept that challenge. This is so because the law of diminishing returns applies to all physical activity promotion, and both sport and gym-based activities are already far enough along their yield curves to require enormous investments to make even modest additional gains. Outdoor activity is so poorly supported that the law of diminishing returns scarcely applies and even modest investments are likely to provide significant returns.

1. The law of diminishing returns applies to public investment in all physical activity promotion because:
2. The physical activity level of an individual is determined by the particular circumstantial and inherent characteristics of that individual, as per the MAST ecology.
3. Each individual is differentiated from other individuals along multiple dimensions and most of these dimensions are spectrum characteristics whose degree of presence has a modified normal distribution (e.g. height, testosterone level, personality trait, distance from arena etc.)
4. Each physical activity type provides a different intrinsic experience for the participant that is partially determined by their particular physical and psychological characteristics (35). For each relevant characteristic those at one end of the distribution are more likely to participate in a particular activity than those at the other end (see Appendix B).
5. Those whose individual characteristics are well-aligned with enjoying the activity will be easy to enroll, but for each attempt to increase the percentage of population participating, a larger amount of the MAST elements will be needed to achieve that increased participation.

The potential for growth in sport participation is limited:

- Sport automatically and progressively exclude non-competitive individuals in each age cohort which ensures that there are reduced opportunities for growth. The High Five strategy for promoting a participant-experience rather than athlete-performance centred culture may help overcome the attrition in sport to some degree, but large gains should not be expected since competitive success is an essential component of that which makes sport intrinsically satisfying (36).
- Few who participate in sport, even when young, meet the required activity level through sport alone. The gap must be filled by one of the other activity types (21).
- Many sports are too physically demanding and risky for the typical older adult.

The potential for growth in gym-based activity is limited because most people find little intrinsic pleasure in these activities. The degree of intrinsic pleasure is mediated by inherited personality differences such that individuals with higher levels of extroversion, conscientiousness and low levels of neuroticism are better able to overcome the boredom, self-discipline, and crowd factors (34). Conversely, introverts, intensity seekers, and novelty seekers are unlikely to participate. The gym industry is already highly innovative in finding ways to overcome the boredom issue and there seems to be little room for growth.

The arguments for the growth potential of outdoor activity fall into two general areas: the observed behaviour of people, and the way in which the law of diminishing returns interacts with factors that makes outdoor activity more intrinsically pleasurable than gym-based activity.

"More Canadians participate in non-sport outdoor activity than either gym-based activity or sport despite where we put our activity-promoting resources, people are already voting with their feet"

Two observed behaviours are of particular interest. The stark difference between the activity levels of Canadians and Norwegians by itself suggests that there is enormous growth potential for outdoor activity. The other is data suggesting that more Canadians participate in non-sport outdoor activity than either gym-based activity or sport (37). In essence, despite where we put our activity-promoting resources, people are already voting with their feet. Unfortunately, because we underinvest in the MAST elements for outdoor activity, those reporting that they prefer non-sport outdoor activity are obviously not doing enough to meet recommended guidelines.

The outstanding feature of non-sport outdoor activities is that they are intrinsically more satisfying for most people than either sport or gym-based activity. Additionally, with proper investment the barriers for Access, Safety, and Training can more easily be overcome for outdoor activity, if we decided to act. Seen through the MAST lens:

Motivation: Outdoor activity is more pleasurable for most people of all ages because of several factors:

- The large body of literature shows that inherited personality is a significant factor in the types of experience we seek. For example, those high on the novelty-seeking, intensity-seeking, or low on the extrovertion spectrums are more likely to choose non-sport outdoor activity (38,39).
- Biophilia: A growing body of evidence suggests that being outside is a powerful intrinsic motivator (40). The biophilic response includes stress reduction and regeneration both of which are known to be intrinsic motivators (41)
- Autonomy: activities that are self-directed enhance self-efficacy and sense of well-being, which are in turn associated with improved ability to be active (42).
- Reflection: For some people, non-competitive and repetitive exercise is uniquely enabling of high quality reflective and creative thought (43).

Access: For most Canadians, the conflicted outdoor cultural narrative has ensured that there are multiple barriers to access. However, the outdoors has the potential to have much lower access barriers than either sport or gym-based activity. The outdoors is literally outside our doors, and so there is no lost time getting to facilities, no facility costs, and exercise is easier to schedule into our daily lives. Equipment costs can be kept very low and active transportation actually saves money.

Safety: Unless a person engages in extreme activities, outdoor activities like walking, cross-country skiing and snowshoeing are perhaps 10 times safer than sport (44,45).

Training: For non-sport outdoor activity, this is currently by far the weakest MAST element. Virtually no training is provided to Canadians, especially the young. Since most children no longer play outside, they do not have the ability to self-educate as past generations have done. A widespread loss of skills by adults has collided with rising and inappropriate risk-management standards to result in a collapse in the ability of adults to provide this training for children and youth. The contribution that near-zero training provides to the weak outdoor cultural narrative cannot be underestimated.

However there are many reasons for believing that these obstacles can be overcome if the will can be summoned:

- The 'children in nature' movement has reached a tipping point as evidenced by its incorporation into government health and education initiatives. This provides leverage for extending these experiences into a complete and evidence-based 'Birth – Grade 12' outdoor strategy for providing every child with the outdoor-active physical literacy beliefs, attitudes and skills required to empower lifelong outdoor activity (46).
- Because outdoor activity is safer than sport, and because a more rational risk management strategies are becoming available, there is no risk management reason to not make outdoor activity a staple of childhood development (47).
- The chronic and extreme shortage of teachers able to lead outdoors is a major barrier, but fortunately the required training to empower teachers to lead into low-risk terrain can be easily and inexpensively provided (48).
- The 'urban renewal for sustainable cities' movement has an obvious common cause with outdoor activity promotion. This movement is supported by influential progressive voices from across the political spectrum, and gains additional support from Canada's commitment to reduce CO2 emissions.

A Weak Outdoor Cultural Narrative has Many Other Negative Effects

This paper has been primarily focused on the intersection between our conflicted outdoor cultural narrative and physical activity promotion, but the outdoor narrative has strong negative effects on many other aspects of Canada's well-being. A brief synopsis of these effects can be found below.

Urban Renewal

There is a large body of literature detailing the negative impacts of suburban sprawl. There is a pressing need to re-engineer our cities in ways that reduce our dependence on cars. This will require urban design that integrates cars with improved transit and active transportation infrastructure. Indeed, it is through adoption of active transportation that most Canadians will become more active in the future. However, increased support for active transportation is strongly opposed by a significant percentage of the population.

Opposition to active transportation is rooted in deeply held intuitions that individuals have about their own ability to choose active transportation over car transportation. These intuitions are the direct result of our failure to provide the supports required for children and youth to develop outdoor physical literacy.

Evidence for the potency of the cultural barriers erected against active transportation can be found in the 2016 federal budget. A stated aim of the government is to sponsor infrastructure that promotes prosperity and avoids legacy costs. Of the three transportation modes (car, transit, and active transportation), active transportation is by far the best fit for these criteria. However the budget allocates $3.4 billion to transit, but not a cent to active transportation. This bias is routinely repeated at the provincial and municipal levels.

Early Childhood Development

The physical and psychological benefits of outdoor play for young children is well established. Considerable progress has been made in the past few years by the children's play movement. However, these experiences are typically delivered by paid specialists and so are mostly restricted to the children of affluent parents. Outdoor play outside of structured programs, particularly unsupervised play, is still rare. This is because of a mixture of irrational fears engendered by the outdoor narrative, and mostly-true perceptions that public space is not safe for children's play because it is devoted to the needs of cars.

Traffic danger is obviously related to urban design. There is an urgent need for us to re-conceptualize public space to put children's safety first, active transportation second, and cars last. Again, virtually no progress is being made in this critically important area because of the negative effects of the outdoor narrative.

K-12 Education

A K-12 education system that is afraid of the outdoor world provides sub-optimal education. As noted above, today's children are failing to develop the outdoor-active physical literacy skills they need to be active for life. Moreover, a number of other important developmental attributes are more easily and completely provided when more of the academic curriculum is provided outdoors. Children that receive high levels of experiential and inquiry-based curriculum outside of the school building are more engaged, get better grades, more likely to graduate, have a stronger connection to their community and environment, and have higher levels of self-efficacy, executive-function, and empathy. Our failure to provide these experiences undermines the competitiveness of our workforce, is a factor in rising levels of mental illness amongst children and youth, and contributes to the declining levels of empathy that threaten to undermine the social foundation of our multi-cultural society.

Environmental Integrity

Most Canadian children do not receive sufficient immersive experience in nature, particularly during the critical post-pubescent years, for exactly the same reasons they do not receive outdoor physical literacy training: immersive environmental education is not considered important; there is a chronic shortage of trained outdoor leaders; and archaic risk-management strategies increase costs and reduce quality. As for outdoor activity, the availability of programming diminishes radically during grades 10-12, which are the critical years for promoting lifelong commitment to responsible environmental behaviours.

Environmentalists are aware of the challenge, but have been forced to fall back on a strategy that mirrors that of the successful 'Sport for Life' strategy. Sport for Life seeks to engage all children in sport while young, and then mines that population for those that will pursue sport through and beyond adolescence and become the champions who inspire the next generation.

Environmentalists hope that tomorrow's children will develop a love for nature through outdoor play. Of those children, a few, mostly affluent, children will pursue their environmental interest through adolescence courtesy of specialty programs. These children are expected to become the champions who will inspire the next generation.

While the champion's strategy is proven successful for sport, it carries great risks for the environment because it promotes conflict between 'interest groups' rather than dialogue and constructive compromise. In essence it replicates yesterday's path in that most of the baby-boom generation and their parents did play in nature, some did become champions, but most are not environmentally committed.

Unfortunately, where sport provides great value to the spectator in ways that rarely conflict with other perceived interests, the interests of the environment are often perceived to be in conflict with other important interests. This divergence of perceived interests is sharpened for many Canadians by the typical environmental champion being highly educated, white, and of affluent parentage, and thus 'not like us'.

There is an urgent need to extend the availability of outdoor education and activity to all post-pubescent youth regardless of their place of residence, ethnicity, or socio-economic status.

Social Inequality and Poverty Reduction

The outdoor narrative negatively affects the lives of some Canadians more than others. These effects are particularly acute for the poor since:

- Access to outdoor education and activity is primarily restricted to children from affluent families. Those that do not have these opportunities are more likely to become sedentary adults and experience reduced opportunity for personal success.
- The failure of Canada to embrace outdoor activity is reflected in urban design that discriminates against those who don't own a car. Those with lower incomes often cannot afford accommodations in communities where cars are not needed. Not being able to afford a car reduces employment opportunities. Not having a car increases the time required to get household food and supplies. For those who are one step up the economic ladder but can afford a car, a large portion of scarce income is consumed by the associated expenses.
- Poor street design and maintenance create traffic hazards that are particularly dangerous for children and older pedestrians. When older people can no longer drive they can become trapped in their homes, dependent on the help of others, or forced to leave their homes at great expense to themselves, their family, or the tax-payer.

There are many socio-economic factors that contribute to the poverty cycle of which the outdoor narrative is just one. However, its role in reducing the life opportunities for the poor and other identifiable groups is much greater than generally recognized and this makes the conflicted nature of the outdoor narrative a social and economic justice issue that should not be tolerable in Canada.

Appendix A

Recommendations for Effective Physical Activity Promotion

The ecological nature of the C-MAST model informs us that limiting action to one element will result in only limited impacts on overall activity levels, but it also tells us that any increase in the supply of one element will increase the supply of the others. This suggests that the most effective strategies will target all the elements simultaneously.

The counterbalancing forces of the MAST ecology and the law of diminishing returns suggests that the most effective use of resources will not to be toward increasing support for those already outdoor-active. This means that developing more wilderness facilities or bike paths for bike athletes should be a lower priority than increasing the supply of MAST elements for those who currently have negative beliefs and attitudes toward outdoor education and activity. Since most Canadians live in cities, these initiatives will primarily be in urban environments.

The various factors that influence the supply of the MAST elements are under the control of diverse public and private agencies, and so action must be taken across a broad front. Unfortunately the conflicted outdoor cultural narrative ensures each agency will tend to argue that it is not their responsibility and/or that it is too low a priority to warrant action. It is critically important for these agencies to recognize the bias in their decision-making processes and compensate for that bias. Consequently, the recommendations here are directed at multiple sectors in the private and public domain.

Finally, the issues discussed here extend far beyond just physical activity and are rooted in systemic

problems, therefore their resolution requires a coordinated systemic response. Consequently, the most important recommendation is as follows:

The federal government, and each provincial government, should create a formal organization to promote a pro-outdoor cultural narrative in a manner similar to that of Sport. These organizations will work with governmental and non-profit organizations to develop and implement a strategy to advance the various initiatives identified in this appendix and others as they become apparent.

Additionally: Federal and Provincial Governments should:

1. Use the funding muscle to ensure transportation infrastructure investment provides more resources for active transportation.
2. Revise traffic safety laws and accident reduction strategies in cooperation with municipal authorities so as to support a 'children's health and safety first' redesign of urban spaces.
3. Work with municipal authorities to redesign taxation and user fee structures that currently promote car culture and urban sprawl by divorcing individual decisions from their consequences.
4. Require a higher proportion of health care spending to be devoted to promoting and supporting healthy lifestyles.
5. Develop tools to periodically measure the health and wellness of K-12 students and demand that school performance on these metrics be of equal importance to their performance on core academic subjects.

Municipal authorities should:

1. Fundamentally restructure urban design. The current design paradigm where the needs of motorized transportation are addressed first must be reversed such that the needs of children's safety and outdoor activity are placed as the highest priority. This standard of safety underpins the design and provision of safe and accessible infrastructure for active transportation as well as improved safety for motorized transport.
2. Ensure that all children, youth, and adults, regardless of their socioeconomic status, have close access to naturalized play spaces that are designed to facilitate the wide range of activities required to ensure healthy physical and psychological growth.
3. Develop and employ public education programs to assist citizens in understanding the health, quality of life, and tax savings that active transportation and outdoor recreation initiatives will bring to them personally.
4. Work with Provincial governments to promote the user-pay strategies required to reverse the current bias toward the subsidizing urban sprawl that makes the above initiatives challenging to implement.

The K-12 education sector should:

1. Re-design the delivery of physical activity so as to require the provision of quality outdoor experiences that encourage positive attitudes and beliefs toward non-competitive outdoor physical activity. Skill development will change to include diverse outdoor activities at the

expense of specialization.

2. Promote and fund in-service training for all physical education teachers and a significant proportion of other teachers to empower them to deliver outdoor education and activity in all seasons and weathers.
3. Provide outdoor programming options for all students in high school since this is the critical period for developing the higher-order skills, beliefs and attitudes required for lifelong activity.
4. Radically redesign risk-management procedures with regard to off-site program delivery so as to empower teachers to provide most of the curriculum currently contracted out to service providers.
5. Promote programs to build the skills, self-efficacy, beliefs and attitude required to empower students to use active transportation.
6. Work closely with municipal authorities to redesign the local urban environment so as to support wholesale walking and biking to school of students.
7. Promote increased delivery of other academic subjects in outdoor environments

Health authorities should:

1. Take a leadership role by networking with other governmental and non-governmental organizations to increase awareness of the value of, and support for, initiatives that promote and support outdoor-active lifestyles
2. Institute comprehensive education programs aimed at parents that will encourage and empower parents to support age-appropriate outdoor activity into their children's lives. This will include a graduated progression from directly-supervised outdoor play, through indirectly-supervised play, to unsupervised activity as the child matures.

Departments of Kinesiology, Physical Education, and Teacher Training should:

1. Incorporate curriculum to empower graduates, particularly those heading towards active-lifestyle promotion or teaching professions, to be able to provide outdoor active programming for their future clients and students. This curriculum will be delivered to a much higher level than is currently available at most institutions and should be mandatory.
2. All students in teacher training programs should have outdoor leadership and education courses made available to them.
3. Radically increase the amount and quality of research effort focused on the various issues associated with providing the supports structures required for outdoor-active lifestyles in all four of the MAST elements.

The authoritative voices within the active lifestyle promoting industry should:

1. Formally and publicly recognize that the current model for promoting physical activity needs to be supplemented by a systemic and vigorous effort to support non-sport outdoor activity, particularly active transportation.
2. Design and promote an age-appropriate and context-appropriate curriculum to guide more effective physical activity programming for youth that includes robust outdoor-active physical literacy.

3. Sport must be much more proactive in supporting the development of outdoor activity competencies and develop a strategy to ensure that as youth drop out of sport they are provided with the resources required to participate in outdoor activity.
4. Advocate for more public and philanthropic support for organizations working on symbiotic projects such as environmental education, urban renewal, and social justice.

Appendix B

Personality and Bias in Physical Activity Promotion

The personality factor literature provides a particularly illuminating example of the biases that inform the physical activity promotion literature.

The very conception of a personality factor involves the type of experience that an individual prefers. Not surprisingly then, there is a great deal of evidence that various personality types are more likely to participate in some activities over others. However, the way in which these correlations have been interpreted is both bizarre and entirely consistent with the intuitional bias engendered by the conflicted outdoor narrative. Thus:

- Personality types that have been shown be associated with outdoor activity, such as novelty seeking, are characterized as 'high-risk' personality types and stigmatized as such. In part, this bias is a direct result of a major cannon in personality research that is primarily concerned with identifying the correlates for 'deviant' behaviour. A categorization that neatly fits the conflicted outdoor narrative. Nonetheless, outdoor activity is, on average, no riskier than sport and certainly safer than sedentary behaviour, which is truly high-risk.
- Where researchers have been concerned with the association between personality type and physical activity they have too often glossed over the fact that personality trait is by definition correlated with experience preference. Physical activity has typically been treated as if it were a unitary experience in and of itself when in fact the intrinsic pleasures of different activity types are very different. Significantly, a survey of backcountry skiers and climbers found that of 10 motivators typically reported for participation in serious leisure activities, physical activity was most often rated the lowest (51).
- The above biases result in biased interpretation of the many studies that have a population sample that is biased toward sport and gym-based activity. Despite good evidence that people who prefer non-sport outdoor activity are more likely to be introverts and neutral with respect to conscientiousness, authoritative meta-studies such as those by Rhodes & Pfaeffli (34) tend to conclude that physical activity is associated with extroversion, and conscientiousness.

These biases in study design and interpretation serve to conceal the true relationship between inherited personality traits and physical activity, which is that particular traits incline a person to enjoy some activities and not others. Consequently, failure to provide to provide the MAST element required for the activity type a person is genetically predisposed to enjoy will greatly reduce their chance of being active.

References

1 Colley, Rachel C.; Garriguet, Didier; et al. (2011) Physically Activity of Canadian adults: Accelerometer Results from the 2007-2009 Canadian Health Measures Survey, Statistics Canada Health Report 82-003-X

2 Janssen, Ian. (2012) Health Care Costs of Physical Inactivity in Canadian Adults. Applied Physiology, Nutrition, and Metabolism. 37, 803-806.

3 Meng, Xiangfei; D'Arcy, Carl. (2013) The Projected Effect of Increasing Physical Activity on Reducing the Prevalence of Common Mental Disorders among Canadian Men and Women: A National Population-Based Community Study. Preventive Medicine 56 59-63

4 Lim K-L.; Jacobs P.; Ochinmaa, A.; Schlopflocher, D.; Dewa, C.S. (2008) A New Population Based Measure of the Economic Burden of Mental Illness in Canada. Chronic Diseases in Canada 28(3) 92-98.

5 Bauman, Adrian E.; Reis, Rodrigo S.; et al. (2012) Correlates of Physical Activity: Why are Some People Active and Others are not? Lancet 380, 258-271

6 Rhodes, R.E.; Dickau, L. (2012) Experimental Evidence for the Intention–Behavior Relationship in the Physical Activity Domain: A meta-analysis, Health Psychology 31(6), 724–727

7 Sallis J.F.; Owen N.; Fisher E.B. (2008) Ecological Models of Health Behavior. Health Behavior and Health Education: Theory, Research, and Practice, 4th edn. San Francisco, CA: Jossey-Bass, 465–86.

8 World Health Organization, (2008) Our Cities, Our Health, Our future. Acting on Health Determinants for Social Equity in Urban Settings.

9 Hansen, Bjorge Herman, (2013) Physical Activity in Adults and Older People: Levels of Objectively Measured Physical Activity in a Population Based Sample of Norwegian Adults and Older people (20-85 years). Dissertation from the Norwegian School of Sport Sciences.

10 Simon, Herbert, (1991) Bounded Rationality and Organizational Learning. Organization Science 2 (1), 125–134.

11 Tversky, A.; Kahneman, D. (1974) Judgment under Uncertainty: Heuristics and Biases. Science 185(4157), 1124-1131

12 Klein, G. (2008) Naturalistic Decision Making. Human Factors: The Journal of Human Factors and Ergonomics Society 50(3), 456-460

13 Berger, P.L.; Luckman, T. (1966) The Social Construction of Reality: A Treatise on the Sociology of Knowledge. Anchor Books.

14 Searle, John (1995). The Construction of Social Reality. New York: The Free Press.

15 Cialdini, Robert. (1993) Influence (3rd ed.). New York: Harper Collin.

16 Brohannan, L. (1966) Shakespeare in the Bush. Natural History. Aug/Sept

17 Fainaru-wada M.; Fainaru, S. (2013) League of Denial. Crown Archetype. 2013. ISBN-10: 0770437540

18 Galbraith, John Kenneth. (1958) The Affluent Society. Houghton Mifflin.

19 Sandseter, Ellen B.H. (2011) Children's Risky Play from an Evolutionary Perspective: The Anti-Phobic Effects of Thrilling Experiences. Evolutionary Psychology 9(2), 257-284.

20 Jenson, Robert A. (2015) Winter Recreation Management of Western United States Public Lands: Evolution, Ethics and Choices. University of Wyoming, Proquest Dissertations Publishing.

21 Active Healthy Kids, (2014) 2014 Report Card on Physical Activity for Children and Youth. Downloaded from http://dvqdas9jty7g6.cloudfront.net/reportcard2014/AHKC_2014_ReportCard_Short_ENG.pdf, Feb. 16, 2016.

22 James, J.J.; Bixler, R.D. Vadala, C.E. (2010) From Play in Nature, to Recreation then Vocation: A Developmental Model for Natural History-Oriented Environmental Professionals. Children, Youth and Environments 20(1), 231-256.

23 Kareiva, P.; Marvier, M.; lalasz, R. (2012) Conservation in the Anthropocene. Breakthrough Journal. Winter 2012. Retrieved from http://thebreakthrough.org/index.php/journal/past-issues/issue-2/conservation-in-the-anthropocene/ Feb 18, 2016.

24 Ajzen I. (1991) The Theory of Planned Behaviour. Organizational Behavior and Human Decision Processes 50, 179:211.

25 Song, Hyunjin; Scwartz, Norbert. (2009) If it is Difficult to Pronounce, it Must be Risky: Fluency, Familiarity and Risk Perception. Psychological Science 20:2 135-138.

26 Kontos, Anthony,P. (2004) Perceived Risk, Risk Taking, Estimation of Ability and Injury Amongst Adolescent Sport Participants. Journal of Pediatric Psychology 29:6, 447-455.

27 McAuley, Edward; Bklissmer, Bryan (2000) Self Efficacy Determinants and Consequences of Physical Activity. Exercise and Sport Science Reviews 28:2

28 Arden C.L.; Taylor, N.F.; Feller, J.A.; Webster K.E. (2013) A Systematic Review of the Psychological Factors Associated with Returning to Sport Following Injury. British Journal of Sport Medicine 47:17

29 Sjoberg L. (2000) Factors in Risk Perception. Risk Analysis 20:1:1-11.

30 Sole A.; Emery C.; et al. (2010) Risk Taking in Avalanche Terrain: A Study of the Human Factor Contribution. Clinical Journal of Sport Medicine 20:6, 445-451.

31 Balish, S.M.; McLaren C.; Rainham, D.; Blanchard, C. (2014) Correlates of Youth Sport Attrition: A Review and Future Directions. Psychology of Sport and Exercise 15, 429-439

32 Dahle, B.: Norwegian (2003) "Friluftsliv"—"Environmental Education" as a Lifelong Communal Process. USDA Forest Service Proceedings RMRS-P-27.

33 Rhodes, R.E. (2006) The Built-In Environment: The Role of Personality and Physical Activity. Exercise and Sport Sciences Reviews 34(2), 83-88

34 Rhodes, R.E.; Pfaeffli, L.A. (2012) Personality and Physical Activity. The Oxford Book of Exercise Psychology. Oxford University Press.

35 Zuckerman, M. (2007). Sensation Seeking and Risky Behavior. Washington: American Psychological Association.

36 See: http://www.highfive.org/what-high-five

37 Gilmour, H. (2007) Physically Active Canadians. Statistics Canada, Catalogue 82-003. Health Reports 18(3).

38 Courneya, K.S.; Hellsten L.A. (1998) Personality Correlates of Exercise Behavior, Motives, Barriers and Preferences: An Application of the Five Factor Model. Personality and Individual Dif-

ferences 24(5) 625-633.

39 Wittmann B.C.; Daw N.D.; et al. (2008) Striatal Activity Underlies Novelty-based Choice in Humans. Neuron 58, 967-973

40 Wilson, Edward O. (1984). Biophilia. Cambridge: Harvard University Press

41 Stebbins R. (2007) Serious Leisure: A Perspective for Our Time. Transaction Publishers, New Jersey.

42 Bandera, A. (1997) Self-efficacy: The Exercise of Control. W.F. Freeman.

43 Wood Daudelin M. (1996) Learning from Experience through Reflection. Organizational Dynamics 24(3), 36-48

44 Leemon, D.; Schimelpfenig, T. (2003) Wilderness Injury, Illness, and Evacuation: National Outdoor Leadership School's Incident Profiles, 1999–2002. Wilderness and Environmental Medicine, 14, 174-182.

45 Emery, C.A.; Meeuwisse, W.H.; McAllister, J.R. (2006) Survey of Sport Participation and Sport Injury in Calgary and Area High Schools Clin J Sport Med 16(1) 20-26.

46 Whitehead, M. (2010) Physical Literacy. Routledge.

47 See http://outdoorcouncil.ca/FL-in-depth

48 See http://outdoorcouncil.ca/Leadership_Training

49 Sole, A. (2012) Human Risk Factors in Avalanche Incidents: a Health Sciences Approach. Lambert Academic Publishing