

Australian Outdoor Adventure Activity Benefits Catalogue

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for the Outdoor Council of Australia



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Executive Summary

Research into the benefits of outdoor adventure activities highlights the valuable contribution they make to personal health and wellbeing. As the empirical and anecdotal evidence in the outdoor adventure field begins to unfold, the proliferation of evidenced-based research grows exponentially. The unique opportunities within the natural and social environments offered by outdoor adventure activities provide varying contexts in which these positive connections are made. These connections are referred to in the outdoor adventure literature as being with the self, others and the environment. Outdoor adventure activities provide opportunities for the connection of individuals with nature (the natural environment), direct connection with other people (interpersonal), and importantly, with themselves (personal). Specifically, the benefits of these connections are shown to lie in the strength and placement of these connections.

This report draws on research from education, recreation, leisure, tourism, sport, adult learning, health, and therapy to highlight the evidence of the positive contributions of outdoor adventure activities. The authors acknowledge the combined effects of difficulties encountered when measuring experiences and benefits with the paucity of Australian and New Zealand research in this area. This has meant a broad sweep of the available research to include both qualitative and quantitative studies, theoretical papers, and reports from complimentary disciplines and other countries. The evidence-based research reported on here used a variety of methods including meta-analyses, questionnaires (mostly utilising psychometric questioning e.g. Life Effectiveness Questionnaire - LEQ), and in-depth interviews and were either cross-sectional or longitudinal in design.

The main benefits of outdoor adventure activities, as shown in the evidence-based literature, include interpersonal and intrapersonal skills developed through engaging in outdoor adventure activities in meaningful ways. Benefits for the natural environment were less directly evidenced, however indirectly were given as developing more nurturing individuals and communities, and the development of environmental awareness and stewardship. The long-term nature of changed attitudes to the environment and sustainability are yet to be examined through longitudinal research.

Benefits were evident in the psycho-social, psychological, physical and spiritual domains, particularly with regards to developing self efficacy, intellectual flexibility, personal skills, and relationship building. The benefits that result from participating in outdoor adventure activities are facilitated through the provision of appropriate facilities and natural resources and well as the design of programs that are intentionally working towards particular objectives.

While there was a wide range of available research, what this review highlights is the need to establish a strategic interdisciplinary research agenda within which researchers, program and activity providers, land managers, policy advisors and other key stakeholders may conduct research and evaluation, and then disseminate the knowledge for others to build upon.

1. Background

In a discussion at the *Outdoor Recreation Industry Leaders Think Tank* conducted by Service Skills Australia in November 2007, it was suggested that one thing the outdoor industry¹ needed was evidence-based research of the benefits of participating in outdoor activities. To achieve this end, a group of sponsors donated to a pool of money, which would enable the collation of relevant research in Australia from 1995 to 2008.

The Centre for Tourism Research at the University of Canberra was approached to conduct the research. Initially the structure was planned to be based upon the *1997 Benefits of Parks and Recreation Catalogue* from Ontario, Canada, however this was revised to producing a single report that provided a clear summary of the available research. The final Australian report aims to provide the basis for a discussion paper for a planned national summit scheduled for mid-2008.

1.1. Terms of reference

The project brief indicated that the Outdoor Council of Australia (OCA) and its members recognised the lack of existing data about the benefits of participating in outdoor activities. This effectively curtails the ability of the outdoor industry to identify and address issues and promote the value of outdoor adventure activities and the associated benefits of participation. The outdoor industry is aware of its links (and benefits) to health, education, tourism, youth, community and personal development. However, the outdoor industry is not adequately equipped to readily provide evidence-based research to attest its benefits.

The Australian Outdoor Adventure Activity Benefits Catalogue project provides the outdoor industry with a concise report which identifies contemporary evidence-based research drawn from both Australia and New Zealand. Moreover, it recognises the value of outdoor adventure activities and both quantifies and qualifies their benefit, whether that be from a health, community, educational, environmental, personal development, recreational and/or tourism perspective.

The final outcome of the project is a report that identifies and categorises the significant Australian and New Zealand research relevant to outdoor adventure activities informed by the Canadian research and other research as summarised in this report.

¹ The term 'outdoor industry' is used as an umbrella term that incorporates all those people both employed and working with outdoor adventure activities as volunteers, suppliers of equipment and facilities, land managers, and participants.

2. Introduction

In the face of health concerns regarding decreasing levels of physical activity and associated rising obesity rates, and rising suicide rates and drug use, the broader community is looking for effective ways of combating these problems. While participation in outdoor adventure activities is not the panacea for social and environmental ills, the growing body of research into the benefits of engagement in outdoor adventure activities (and into the programs and methods used) points towards multiple benefits for people, their connection with others and with nature.

2.1. Outdoor adventure activities

It should be stated at the outset of this review that the emphasis is upon human-powered activities in the outdoors. As such, there is a focus upon the active involvement in physical activities conducted in the outdoors. The authors are also cognizant of 'feeder' adventure activities that may be indoors such as climbing gymnasiums and exercise bicycles. The main interest of this review pertains to those activities occurring in natural or non-urban environments. The reason for this latter emphasis is duplication of the substantial work by Deakin University, which is currently being updated, that has focused upon more urban environments such as parks and gardens (Mallar, Townsend, Brown, & St Leger, 2002a, 2002b).

By focusing upon human-powered outdoor adventure activities, a wide range of possible activities was included such as hiking, mountain biking, climbing and canoeing. In seeking to define 'outdoor adventure' Ewert (1989) made reference to a range of definitions that incorporated elements of physical danger, creating meaningful human experiences, involvement in the outdoors, and facing a challenge. Terms such as outdoor recreation, are totally artificial constructs (Mercer, 1994) that seek to place definitional limits over, often, blurred realities. For example, rock climbing is often considered an outdoor adventure activity, however, with the proliferation of indoor climbing gyms, many people may use the equipment and techniques of rock climbing, but never actually venture outdoors to climb on natural rock surfaces. By participating, albeit indoors, they may achieve similar benefits in terms of physical activity, group cohesion and sense of 'flow' (Csikszentimihalyi, 1990) but with less time and travel costs. While this review has focused upon outdoor *adventure* activities, other research has been included that is not necessarily adventure, but still has the element of human-powered activity conducted in the outdoors.

The context in which these activities occur is also of importance. Again, using the broadest brush possible, the research included in this review, as suggested by the methodology, has been drawn from areas such as education, recreation, tourism, environment, religion, health, therapy and business and has occurred in a wide range of areas such as protected areas, on the water, in remote areas and in urban environments. The latter has particularly been included as much of the health research identified, as well as some of the more generic physical activity research, has been conducted in urban or semi-urban settings.

2.2. Benefits frameworks

There has been a variety of models/frameworks used to analyse benefits of outdoor and adventure activities. These recent models and frameworks as presented in Stiehl and Parker (2007) have been summarised in Tables 1-4 over the page.

Table 1 Benefits of Outdoor Adventure (Darst & Armstrong, 1980)

Dimension	Benefit
Personal	New experience – adds a kick to participants’ lives, allows them to experience something
	High-risk experience – facing perceived danger may help participants overcome fears, gain self-confidence, and enhance their ability to cope
	Escape – offers release from the tensions and complexities of modern life
	Success – allows participants to achieve a highly personal senses of accomplishment
	Knowledge – participants learn more about themselves and the environment
	Physical fitness – physical activity can help burn calories and increase strength, stamina, and flexibility
Economic	Minimal financial investment – provides interesting and pleasant activities at a reasonable cost
Social-psychological	Socializing – provides a chance to meet others who have similar interests
	Unity – promotes cohesiveness and doing things together without the distractions of everyday life
	Cooperation and trust – promotes better relationships through cooperation, appreciation of others, compassion and respect
	Nature and outdoors – promotes aesthetics appreciation for nature and concern for vanishing wild places

Table 2 Benefits of Outdoor Adventure (Ewert, 1989)

Dimension	Benefit
Psychological	Benefits on a personal (versus group) basis: Self concept (enhanced or strengthened view), self-efficacy (self-confidence), self-actualisation (well-being, improved self-expression, feelings of psychological health)
Sociological	Compassion, cooperation, respect for others, communication
Educational	Improved academic abilities, awareness of nature and the environment, problem solving, outdoor skills, values clarification
Physical	Strength, co-ordination, balance, cardiovascular endurance

Table 3 Goals and Benefits of Outdoor Adventure (Webb, 1999)

Dimension	Benefit
Recreational	Enjoyment, relaxation, entertainment, excitement, catharsis, self-expression
Skill	Goal setting, decision making, problem solving, responsibility, physical development, nature awareness, communication, leadership
Character	Independence, interdependence, self-efficacy, willingness to take risks, tolerance, respect, trust, compassion

Table 4 Benefits of Camping (American Camp Association, 2005)

Dimension	Benefit
Positive identity	To the participant: e.g. self-esteem, determination, dependability, ambition, independence
Social skills	Beyond the individual: group bonding, cooperation, conflict resolution, appreciation of differences, leadership, community, connected to others
Physical and thinking skills	Activity skills, psychomotor and technical skills; physiological benefits of physical activity Thinking skills: knowledge of safety measures, planning, problem solving, environmental awareness
Positive values and spirituality	Acquiring and strengthening virtue; selflessness, compassion, keeping commitments, fulfilling obligations, self-discipline, honesty ... Connection to earth, others and even a higher power

Following is an outline of the methodology used to gather the wide range of research and reports, and the presentation of the results which include a summary of seven previous reviews of the benefits of sport, recreation and exercise that have been conducted world-wide. Given the emphasis upon the health benefits of participating in outdoor adventure activities, further information is presented about Australia’s efforts in relation to health and physical activity, including a summary of recent government policies and strategies.

3. Methodology

The resources for this review were collected in a variety of ways:

- A keyword search was made of online databases of academic literature across eight databases that included more than 32,000,000 documents. The databases covered education, sport, leisure, recreation, tourism, health, allied health, psychology, business and the environment. The search was limited to documents from 1995 that were in refereed publications. The search terms used were a combination of the primary and secondary terms in Table 5;
- Using the same search terms, a second online search was made of digital theses for the same time period;
- A search using www.scholar.google.com was made using the same search terms in Table 5;
- An online search was made for reports, policy documents and other references;
- More than 100 letters were sent out by the Outdoor Council of Australia to national and state outdoor organisations, relevant State and Federal government Departments (e.g. Departments of Sport and Recreation); and
- An email was also sent to several contacts in New Zealand to gather further reports or publications not otherwise available.

All online materials were further sorted to extract only those publications that could be identified as emanating from Australia or New Zealand, conducted in Australia or New Zealand or published in Australia or New Zealand. The total publications considered in this report are:

- 7 international studies of outdoor, recreation and sport benefits,
- 89 research-based articles, reports and theses; and
- 21 Government reports or strategies.

The majority of the publications identified focus upon activity settings such as outdoor education programs or other organised activities. It is suggested that this is due to the fact that this is where the bulk of the research is happening. There is no suggestion that benefits do not occur in other settings in the vast array of non-organised or semi-organised settings such as personal participation or volunteer clubs or organisations.

Table 5 Literature search terms

Primary Terms	Secondary Terms
Outdoor Recreation Leisure Adventure Camp Wilderness Outdoor education Environmental education	Benefit Effect Evaluation Outcome
Summer camp Adventure therapy Wilderness therapy Spirituality	N/A
Activities: <ul style="list-style-type: none"> • Abseiling • Canoeing/kayaking • Cycling • Hiking, trekking, tramping, bushwalking • Mountain biking • Rafting • Rock climbing • Ropes course • SCUBA • Skiing • Snowboarding • Surfing • Trails, rail trails 	Benefit Effect Evaluation Outcome

4. Results

The results of the review of the research are presented in two parts, the first summarises seven previous reviews of the benefits of sport, recreation and the outdoors that have been conducted, followed by analysis of the research and reports identified in this review.

4.1. Recent reviews of evidenced-based research of the benefits of recreation, the outdoors and sport

There has been a range of recent publications world-wide that have investigated the benefits of physical activity, being in the outdoors and the value of connecting with nature. The following provides a summary of seven of these.

4.1.1. Benefits of Parks and Recreation Catalogue, 1997

This Canadian report was based upon an earlier Canadian benefits catalogue, produced in 1992, which was initiated due to the difficulty for parks and recreation agencies to demonstrate the intangible benefits they contributed. The earlier catalogue identified four categories or themes of benefits:

- Personal benefits: helping individuals achieve their full potential
- Social benefits: promoting healthy families, neighbourhoods, and communities of interest
- Economic benefits: essential to financial well-being
- Environmental benefits: that contributed to the protection of the common ecology (Canadian Parks/Recreation Association, 1997).

A key insight that emerged from the first project was that while the parks and recreation agencies had the *potential* to contribute to these benefits, the reality was that their services did not necessarily achieve these ends. Thus, there was a push to actually provide the products and services that delivered these ends. The purpose of the revision of the catalogue in 1997 was to get those in the fields of recreation, parks, sports, fitness, arts and culture to focus on outcomes linked to 44 statements of outcomes and eight key marketing messages. The eight key marketing, or outcomes, messages were linked to four categories of benefits identified in the initial benefits catalogue (Table 6).

Table 6 Comparison of benefits categories with outcome messages, Canada

Eight key marketing messages	Personal	Social	Economic	Environmental
1. Recreation and active living are essential to personal health –a key determinant of health status				
2. Recreation is a key to balanced human development – helping Canadians reach for their potential				
3. Recreation and parks are essential to quality of life				
4. Recreation reduces self-destructive and anti-social behaviour				
5. Recreation and parks build strong families and healthy communities				
6. Pay now or pay more later! Recreation reduces health care, social service, and police/justice costs				
7. Recreation and parks are significant economic generators in your community				
8. Parks, open spaces, and natural areas are essential to ecological survival.				

Source: Canadian Parks/Recreation Association. (1997). *1997 Benefits of Parks and Recreation Catalogue*

It was suggested that the benefit of the catalogue, itself, was that it:

- Reminded people in parks and recreation of the value of their work;
- Acted as a basis for evaluation of various programs and services;
- Influenced policies and the prioritisation of planning strategies;
- Provided support when seeking support and funding;
- Helped form networks between groups and organisations doing similar work;
- Provided marketing messages for outcomes-based products and services; and
- Identified research gaps (Canadian Parks/Recreation Association, 1997).

4.1.2. Best value through sport: The value of sport. London, UK, 1999

Sport England (1999) adopted a very broad definition of sport as defined by the Council of Europe's *European Sports Charter* (Council of Europe, 2008) which defines sports as:

...all forms of physical activity which, through casual or organised participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels. (Sport England, 1999, p. 8)

This definition includes all activities from recreational and casual participation to elite competitions, informal and formally structured activities. As such, they recognise the value of sport, broadly defined, to the greater social agenda. The research reviewed highlighted the value of sport across four areas:

- the global and international arena in terms of a country's history, pride and folklore;
- the social value from participation such as health outcomes, decreased crime rates, impacts upon young people's education, the contribution of volunteers, as well as the effect upon community cohesion and renewal;
- the economic value of sport is undeniable when considering the short-term value of sponsorships, event revenue and expenditure upon sporting equipment. More recent research has focused upon the enduring legacy of events such as the Olympics to local communities (Darcy, 2003; Lee & Taylor, 2005); and
- the environmental value of sport is attributed to the role that sport and recreational resources play in breaking up the highly urbanised environment, providing places for people to connect and engage with nature. These spaces can also facilitate awareness of environmental values and the need for sustainable development.

4.1.3. Healthy parks, healthy people: The health benefits of contact with nature in a park context, 2002

As with many of the other reports discussed here, these Australian reports (Mallar et al., 2002a, 2002b) note the increasing disengagement of humans from the natural environment which is, in great part, due to the increasing urbanisation of Australian society. Their literature review focused upon contact with nature in a park context. Contact included watching the view, being active in the park and/or interaction with plants and animals in that context. Parks were chosen as they are the main, or only, place of contact with nature for many in a highly urbanised world.

Findings from the literature review highlight the benefits not only of being in nature, but also being able to observe it, for people's health, wellbeing and stress reduction. It has also been associated with improvements in immunity and productivity. These benefits may also impact more broadly upon small groups and neighbourhoods. Programs that have drawn upon the findings of this literature review include the *Healthy Parks, Healthy People* initiatives in Australia's national park services and the Galloway Forest Project, a project of *Project Scotland* (www.projectscotland.co.uk), which is carrying out conservation work with the help of volunteers. Other programs that are exploring similar ends are *Active England* (www.aelz.org) and research by the Forestry Commission of the UK entitled *Benefits of using woodlands and natural spaces* (www.forestresearch.gov.uk).

4.1.4. Getting Australia active II: An update of evidence on physical activity for health, 2004

The second review of literature on public health and physical activity (Bull, Bauman, Bellew, & Brown, 2004) was designed to feed into the development of a National Physical Activity Strategy and Action Plan. Focusing on the period 2000-2003, this research review emphasises the epidemiological evidence that physical activity has a positive impact upon health in the areas of cardiovascular disease, cancer prevention, diabetes, and mental health. Particular activities that were noted included cycling to work and moderate to brisk walking. A review of research from 1999 was conducted to explore what interventions were effective in increasing physical activity. The most effective model appeared to be a community-wide, 'environmental and policy' approach that included: raising awareness, improving self-efficacy and improving access to places and programs where physical activity could occur. This is similar to the initial design (1996-2000) of *Active Australia*, which was aimed at developing partnerships between sport, recreation, education, health and business. However with the release of the *Backing Australia's Sporting Ability: A more active Australia*, the focus was reduced to sport and became a program of the Australian Sports Commission.

4.1.5. A review of research on outdoor learning, 2004

This UK report (Rickinson, Dillon, Teamey, Morris, Choi, Sanders, & Benefield, 2004) was driven by a concern that there had been a decline in opportunities for students in English schools to participate in outdoor learning activities. The authors reviewed 150 research publications on outdoor learning published in English between 1993-2003. This included fieldwork and outdoor visits; outdoor adventure education; and school grounds and community projects. Outdoor adventure education was considered to include 'Outward Bound programmes, residential or day visits to outdoor activity centres, school-based outdoor education lessons or clubs, wilderness trips and summer camps' (2004, p. 27).

In relation to outdoor adventure education, it was noted that the bulk of the research originated from North America and Australasia. Two meta-analyses were noted for providing evidence of the impact of outdoor adventure programs in young people (Carson & Gillis, 1994; Hattie, Marsh, Neill, & Richards, 1997). The connection to the development of academic outcomes was most evident where the aims of the program targeted specific academic skills, though, of the research reviewed, there was little evidence supporting the development of the environmental awareness of participants. It was suggested that there was 'considerable evidence to suggest that outdoor adventure programs can impact positively on young people's attitudes, beliefs and self-perceptions' (2004, p. 27). As noted before, the impact upon environmental awareness was limited where there was no intentional facilitation of environmental awareness – potentially, the mountains did not speak for themselves. The evidence for cognitive and physical/behavioural outcomes was less robust than that associated with intrapersonal and interpersonal outcomes.

4.1.6. Reconnecting children through outdoor education, 2007

A driving force for this report was the increasing disconnection of young people with the outdoors, increased use of a variety of technologies such as video games and personal computers, and rising rates of childhood obesity, Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD). In response to these drivers, the Council of Outdoor Educators of Ontario (COEO), Canada conducted a review of evidence-based research on outdoor and experiential education (OEE) (Holmes, 2007). It was suggested that OEE:

has many forms and takes place in a variety of local and remote, urban and wilderness settings – field centres, canoe trips, high school interdisciplinary programs, private camps, school-accredited Outward Bound courses, public agencies such as the YMCA, school ground greening projects and others. (Holmes, 2007, pp. 8-9)

Their findings highlighted the relationship between OEE and real-life situations. OEE students had better engagement and enthusiasm for learning; better results; and a greater connection with their achievements as well as improvements in critical thinking. Additionally, outcomes for physical, emotional and spiritual wellbeing were enhanced when students spent more time outdoors in nature. Research had indicated that there could be improvements in nutrition, physical activity, reductions in crime and ADD as a result of OEE. The key recommendations that emerged from this research review were that:

- OEE, particularly when delivered by trained outdoor educators, needs to be recognised as an effective learning methodology;
- OEE should be imbedded across all school years and as a recognised area of specialisation; and
- Government funding should be provided for two OEE programs for a total of seven days.

To support these recommendations COEO also called for Canadian universities to help promote additional Canadian research into the benefits, including long-term impacts, of OEE.

4.1.7. Children and nature 2008: A report on the movement to reconnect children to the natural world, 2007

Charles, Louv, Bodner and Guns' (2008) report for the Children and Nature Network in Santa Fe, New Mexico, builds upon the inspiring book *Last child in the woods* (Louv, 2006) that seeks to save children from 'nature-deficit disorder', which they link to rising obesity levels, attention disorders and depression in young people. The movement to reconnect children to the natural world seeks to 'help shape a society in which the public once again considers it to be normal and expected for children to be outside and playing in natural areas' (Charles et al., 2008, p. 21). The biggest barrier to achieving this is fear. Other barriers identified include lack of natural resources; time pressures; electronic distractions; and, for some, ethnicity and cultural issues.

The report highlights research that indicates that children in the 21st century:

- spend less time outdoors;
- have low levels of knowledge of nature and the outdoors;
- spend more time each week with computers and video games than with nature;
- are less likely to venture away from their house to play; and

- have five times the rate of childhood obesity than those in the 1960s.

This research contrasts with the benefits identified of connecting and engaging with nature that have included better health; better coping skills; reduced crime; greater curiosity; enhanced cognitive skills; improved academic outcomes; improvement in symptoms of ADHD, as well as the restorative value of ‘green exercise’. Meaningful engagement with nature as a child also has a direct correlation with involvement in environmental issues in the future which is of great interest as communities look for the next generation of environmental leaders and activists.

4.2. Australian and New Zealand research, 1995-2008

The research and the reports considered in this review have drawn upon literature from a range of disciplines including, education, health, recreation, tourism, therapeutic programs. Commensurately, the activities and the programs have been conducted from urban to wilderness environments, over time-periods ranging from a few hours to a full year. The activities were conducted both on the land and in the water. As this review includes groups from a therapeutic context through to recreational settings, the group sizes also varied greatly. The participants in this research cover people across all age groups, in groups that included voluntary participation through to mandated involvement.

While previous analyses have used broad structures of self, others and the environment, given the diverse literature considered here, the findings will be presented under the headings related to the program or activity context: education, recreation, health and therapy.

4.2.1. Education

There is a great range of programs conducted within educational contexts that have been the subject of recent research. These include Duke of Edinburgh style programs (Bailey, 2004), extended stay outdoor education programs (ESOEP’s) (Gray, 1997; McLeod & Allen-Craig, 2007), environmental education centres (Ballantyne & Packer, 2007), cross-curriculum programs (Eglington & Broderick, 2008; Haddock, 2007a) as well as more traditional outdoor education programs (Hales, 2006; Haskell, 2000; Purdie, Neill, & Richards, 2002).

As can be expected from such diverse programs, the outcomes that have been reported are also wide-ranging. Improved relationships with self and others were identified as a result of participation in a Duke of Edinburgh program (Bailey, 2004), while self-confidence and problem solving skills had been enhanced in concert with gains in academic achievement as a result of students’ involvement in outdoor education programs (Haddock, 2007a, 2007b). The most common method used to measure changes in this area is the Life Effectiveness Questionnaire (LEQ) (Bailey, 2004; McLeod & Allen-Craig, 2007; Outward Bound Australia, 2007a, 2007b). The LEQ is a 16 item self-report questionnaire that measures eight dimensions:

- Time management;
- Social competence;
- Achievement motivation;
- Intellectual flexibility;
- Task leadership;
- Emotional control;

- Active initiative; and
- Self-confidence.

Programs that had a more personal development orientation have often been evaluated using the LEQ. In a long-stay outdoor education program for boys in year 9 (n=104), it was found that the program was effective in enhancing participants' life effectiveness skills when compared to non-outdoor education programs. The results showed a statistically significant difference ($p < .05$) (McLeod & Allen-Craig, 2007). In a Bronze Duke of Edinburgh program for year 9 students (n=52) it was found that girls had a more substantial increase in the LEQ scores (Bailey, 2004). In an Outward Bound program for year 9 girls (n=123) the greatest effect sizes were noted in emotional control, self confidence and time management (Outward Bound Australia, 2007b). In contrast, a co-educational group of year 11 students (n=176) in Western Australia achieved greatest changes in the dimensions of self-confidence and time management (Outward Bound Australia, 2007a). These are just two of many internally generated and produced reports by Outward Bound Australia evaluating their programs.

Other school-based programs have been assessed using a variety of methodologies which have also reflected the diverse program aims or emphases. For example, a review of environmental education centres in Queensland was focused upon the learning opportunities (Ballantyne & Packer, 2007) through the use of quantitative and qualitative methodologies with day and residential participants. They concluded that the highest levels of engagement were observed in field investigations and stories and/or dramas. Additionally, the top three modes of delivery that achieved the learning outcomes were reflective responses, field investigations and walks or hikes.

Gray's PhD thesis (1997) evaluated two year 9 cohorts at Timbertop (participants from 1993 and 1994) who were participating in a year-long extended stay residential outdoor education program. The research design was both quantitative and qualitative (n=201 in 1993 and n=204 in 1994). The findings were that students made appreciable gains in environmental sensitivity, physical aptitude and autonomy.

Neill and Richards (1998) created a summary of meta-analyses of the effects of outdoor education programs. The three meta-analyses involved over 12,000 participants of mixed groups, ages, varied levels of experiences, course durations and types. An analysis of typically measured outcomes, such as personal development, changes in self-concept, self-confidence and locus of control, revealed small to medium impacts on these outcomes.

On average, outdoor education programs appear to have a small to moderate effect on participants' perceptions of their own qualities and capabilities...(roughly equivalent to ... other types of self-concept change programs). These results are a positive endorsement of outdoor education as a legitimate and effective educational training method... Outdoor education definitely has something to offer. (Neill and Richards, 1998, p7)

Important factors influencing the outcomes of outdoor education programs were program design and facilitation; program length (longer programs produce better outcomes); age of participants (adult participants tend to achieve larger outcomes). There was some evidence to support adventure therapy approaches such as finely tailoring programs to suit participants and applying therapeutic principles in the programming and facilitation of outdoor adventure activities.

Purdie, Neill and Richards (Purdie et al., 2002) conducted a quantitative study (n=177) using the ROPE and SDQ-II instrumentation. The aim of the research was the investigation of self-

expressed identification with Australia following an outdoor education program. They surmised

If there is not a fit between a participants' self-conceptions on the one hand (e.g. whether or not they identify as Australian and what this means to them) and what appears to be on offer in an outdoor education program on the other hand, then the chances of successfully achieving program aims may be reduced. ... it was participants' senses of Australian-ness that was related to program outcome, and not the other background variables of gender, motivation and previous experience in the outdoors. (Purdie et al., 2002 p.38)

Lugg (1999) reviewed the Victorian Certificate of Education (VCE) outdoor education curriculum. It was considered that the Victorian outdoor education curriculum is "gradually evolving and in the process is developing a strong ideological basis, a distinctive body of knowledge and a coherent sequence of learning" (p.31). More recently, Gough (2007) conducted an historical account of outdoor education studies in the Victoria education department and found that environmental education fostered relationships with the natural environment whilst enhancing personal and social development.

Zink (2005) interviewed cohorts of secondary school-aged participants from two different outdoor adventure programs in New Zealand. The first program involved year eight participants in a four-day residential program involving confidence course, a day walk, kayaking, initiatives, an overnight camp and climbing. The objectives of the first program were to encourage cooperative relationships between the students, develop and apply skills for participating in challenging outdoor activities and develop and demonstrate responsible attitudes when participating in outdoor activities. The second program involved year twelve participants in a seven-day camp with sea kayaking and tramping (bushwalking). The objectives of the second program were to promote strong bonds between class members, develop skills in sea kayaking and bush craft, experience and develop an appreciation for the unique environment, develop trip planning and risk management skills and promote further participation in outdoor activities. The findings from the two interviews highlighted the importance of the participants' synthesis of the outdoor adventure experience in the context of the activity and the camping program overall. Zink (2005) concludes that the expected benefits of outdoor education (cooperation, bonding, skill development, planning and risk management) should be taken within the context of what is happening for the participants, rather than what ought to happen.

4.2.2. Adults

Tertiary students

Dickinson (2000) studied the emotional responses of a group of tertiary students (20-25 years, n=12) who participated in a six day sea kayak program on Hinchinbrook Island. Participants reported that more emotional episodes were induced by the environment than due to any other factor.

Dingle and Kiewa (2006) conducted semi-structured interviews with nine university students on a river paddling journey. There were differences in the reported experiences of the females and males, with the females indicating that social fear was a powerful inhibitor in risk taking and learning. Social fear also impacted upon confidence and competence. To overcome these barriers, the instructional staff and the attitudes of the participants were important.

Other adults

Leberman and Martin (2003) explored participants' understandings of peak learning and comfort zones within adventure activities using qualitative open-ended questions in two different Outward Bound courses operating in the Czech Republic (mixed group n=25) and New Zealand (female group n=28). The age range for the Czech cohort was 18-34 whilst the New Zealand cohort ranged from 18-48. Although the physical activities took participants outside their comfort zones, it was found that greater learning was derived from the more generic aspects of a program (e.g. group work and reflections). They caution that although the physical activities provide opportunities for participants to be moved outside of their comfort zone to experience other realities, the design of the learning program should incorporate mechanisms for additional learning.

Little and Schmidt (2006) undertook a phenomenologically-inspired interpretative study using unstructured in-depth interviews with ten participants (7=females, 3=males). The aim was to examine the "meaning" and "nature" of travel experience that was described as spiritual by participants who were aged 32-68 years. According to Little and Schmidt (2006), respondents gained an enhanced awareness of self, God or 'other' and felt a greater sense of connection with something beyond the self.

In an attempt to get a deeper understanding of the improvements in quality of life derived from leisure participation, Lloyd and Little (2005) conducted semi-structured in-depth interviews with 20 females aged 26-65 years. They hypothesize that 'access to opportunities to participate in leisure contributed to a sense of quality of life' (Lloyd and Little, 2005, p.172). Interestingly, the outdoor recreation activities gave women an opportunity to create and experience a balanced life by enabling them to have fun, escape routines, satisfy personal needs; gain greater self-confidence and a sense of competence. They purport that longitudinal research is needed to examine the issues of quality of life (QOL) and women's participation rates. However, the most salient issue of their research is that "findings do support previous studies that have shown that engagement in leisure has a positive impact on QOL and how women's QOL is enhanced by participation on social, and physical leisure" (Lloyd and Little, 2005, p. 176).

Kane and Tucker (2007) interviewed 12 renowned New Zealand adventurers aged 41-88 years (10 males, 2 females). Their findings showed that the natural environment is an important "facilitating" and "distinguishing feature" in the adventure experience. Their identity as an adventurer had been influenced by their relationship with the environment. The participants revealed that adventure had played an important role in challenging what is considered normal and formal in society. To this end, the authors maintain that adventure is "a vital component of human success and ongoing sustainability" (Kane and Tucker, 2007, p.37).

People with access requirements

People with access requirements include those with permanent or temporary disabilities, seniors who may have mobility needs and also families with young children in prams. Together these can include up to 35% of the population at anyone time (Dickson, 2007a). Dickson cited previous research by Disable WinterSport Australia (DWA) that indicated that DWA's members desired to be able to participate in summer activities in the alpine areas. 'In 2004, 60% of respondents indicated that they were interested in summer activities in the alpine areas, while in 2006 30% indicated they would like to try canoeing or camping in the wilderness; 28% horse riding; 26% mountain biking; 25% sailing; 23% hiking, climbing Mt Kosciuszko or abseiling and 22% fishing' (Dickson, 2007a, p. 10). This research reflects the

broader understanding in the leisure and tourism areas that people with access requirements have the same desire for opportunities to participate in outdoor activities, and also gain the same or greater benefits.

Harris (2006a; Harris, 2006b) explored the perceptions of people (n=17) with disabilities who participated in an eight day Outward Bound program in New Zealand. The program included bush-walking, rock-climbing, rafting, sailing and high ropes. The participants ranged in age from 18-38 years. Data was collected using both quantitative and qualitative methods: the Life Effectiveness Questionnaire (LEQ) (measure one month pre-course, during course, one week post course and three months post course), focus groups, in-depth interviews, observations and journal entries. The greatest change in the LEQ was in intellectual flexibility, with significant differences in emotional control, social competence, achievement motivation, active initiative, and self-confidence. From the qualitative data it was concluded that the debriefing and feedback sessions provided the catalyst for change as it was a forum in which participants heard how others perceived them. The combination of achieving something thought beyond one's abilities in a supportive environment, being able to express thoughts and feelings created a sense of achievement and personal motivation that participants believed they would be able to apply in all other areas of their lives.

4.2.3. Sport, recreation and tourism

Understanding the motivations and experiences of participants is important when seeking to provide outdoor programs or experiences to facilitate particular outcomes. Kiewa (2001) undertook a qualitative study employing in-depth interviews and diary entries of adult rock-climbers. She analysed the responses of 17 males and 14 females over a 12-month period in an attempt to develop an understanding of the effects of gender on how personal meaning of climbing is constructed. The study found that outdoor adventure programs should be constructed with the view that '...both men and women will benefit from programmes designed to support skills associated with the opposite gender' (Kiewa, 2001, p.11).

The doctoral study of Boyle (2002) investigated the effectiveness of adventure-based training on the development of team cohesion and the development of psychological skills. An elite netball team and their coaching staff (n=36) undertook an intensive weekend of adventure-based training activities. The program incorporated initiative games, indoor climbing and abseiling, giant swing, run, swim, bushwalk, overnight camp, caving. The participants gained improved communication skills, effective application of psychological skills in high-pressure situations and identified benefits that were applicable to both netball and other life situations. Boyle (2002) concludes that adventure-based training activities have positive, lasting effects on elite sporting teams. Furthermore, if all other variables (such as skill, ability level, fitness etc.) are equal, participation in adventure-based training activities can provide a winning edge.

In seeking to understand the needs, motivations and expectations of participants on a one-day white water rafting trip near Melbourne (including a 2.5 hour trip either way), a survey was conducted over 17 trips with 344 usable responses. The research concluded that there were significant differences in needs and motivations between those with previous rafting compared with new participants. Newer participants tended to focus more upon the challenge and novelty of the activity, while the experienced participants focused more upon the ancillary benefits such as spending time with friends, being in the outdoors and resting and relaxing (Fluker & Turner, 2000).

Brymer's doctoral thesis (2005) was a phenomenological study that focussed on extreme sports participants (n=12). The study was undertaken on four female and eight male participants who ranged in age from 30 - 68 years with the view to obtaining a deeper

understanding of the outcome of risk, death and fear on the extreme sports persons' psyche. It was discovered that, contrary to popular opinion, extreme sports people have a 'life-wish' not a 'death-wish'. Consequently, the experience was highly spiritual and transformational for participants.

In a less challenging context, two surveys were conducted of visitors to Mt Kosciuszko during peak periods when more than 2,000 people may visit the summit on any one-day. The earlier survey during Easter 2005 had 494 participants while the latter, conducted over summer 2005/6, had 2,492 responses (2007b; 2007c). In each case, participants both expected and experienced wilderness in the summit area, even though there are substantial structures to protect the environment. The most important motivations for visiting Mt Kosciuszko were the scenic beauty followed by enjoying the outdoors and climbing Mt Kosciuszko. For over 50% of respondents, encountering wilderness was very important to them. Despite the high visitation levels, and the extensive human intervention for track management, people still had high satisfaction levels with their experience of the area.

4.2.4. The provision of facilities

The benefits of participating in physical activities, in particular outdoor activities, are dependent upon the provision of appropriate infrastructure, as explored further in the health section. In the context of leisure planning, Aldous (2006) noted that there was a broadening appreciation of the connection humans have with nature and the very need to have 'green spaces' in urban areas 'that not only feeds and enhances our physical bodies but one that also soothes and replenishes the minds and spirits of people' (Aldous, 2006, p. 8). The theme of infrastructure provision is further developed by Crilley (2007) who sought to understand the important attributes of trails, from a users perspective, as indicated by 35 attendees at a parks and leisure conference. The top five trail attributes were: the trail should be safe; easily accessible; have adequate signage along the trail; well-maintained surface, and that the trail should be appropriately managed. The economic benefit to a region that was attributed to the provision of an artificial reef for SCUBA diving in Geographe Bay, WA, was estimated at US\$1.39 million over a 16 month period to May 1999 (Dowling & Nichol, 2001; Stolk, Markwell, & Jenkins, 2007).

4.2.5. Health and therapeutic

Health

Most Australians fail to meet recommended physical activity levels. Participation in a range of physically active pursuits is recommended throughout the life course by the World Health Organisation and particularly for healthy ageing (Doney & Packer, 2008). Of all the types of time in an individual's day, leisure-time has the greatest scope for increasing the health promoting levels of physical activity. The benefits of raising levels of physical activity are directly associated in particular with improved cardiovascular health, blood pressure, and mental health.

Health promotion and health research literature often includes physical activity in the out-of-doors as beneficial for an individual's overall health and wellbeing, in particular for physical and mental health. Research in this area has found that better health is achieved when more varied physical activities are included, and when a broader social network is involved (Giles-Corti & Donovan, 2003). Outdoor adventure activities offer such a variety and compliment urban activities with offerings such as bushwalking, mountain biking and cycle touring, canoeing, sailing, skiing, orienteering, rock climbing, snorkelling, surfing etc.

The public health benefits of leisure-time physical activity are linked to the accessibility of individuals to:

- living environments conducive to out-of-doors activity, such as walking and cycling
- social environments conducive to shared experiences and support networks
- health care that incorporates ‘green prescriptions’ encouraging physical activity as a part of health consultations (Elley, Kerse, Arroll, & Robinson, 2003).

Leisure-time physical activity is seen as having the greatest potential for improvements at a population level. The following summaries of the health related literature highlight how outdoor adventure activities provide stimulating opportunities for individuals and groups to engage in health promoting levels of physical activity. Out-of-doors environments are healthy social and physical places in which individuals can be physically active.

Giles-Corti and Donovan (2003) analysed correlations between individual, social environmental, and physical environmental aspects of walking. The study was conducted in Perth in 1995-96 with randomly sampled adults aged 18-59 years (n=1773). It was concluded that walking was a popular leisure activity (68.5% of participants walked for recreation) and that those who participate in a wider variety of physical activities are more likely to achieve the recommended levels of physical activity for optimal health than those who don't. The public health benefits of walking for individuals and for the environment were highlighted. The study provided empirical evidence to support the higher likelihood of achieving recommended levels of walking in those with a positive attitude towards being physically active, as well as in those who exercised with a number of significant others (the odds increasing with the number of significant others increasing), and those who lived in a physical environment conducive to walking.

Elley, Kerse, Arroll and Robinson (2003) studied the long-term effectiveness of a program that uses counselling on physical activity (‘green prescriptions’) as a part of general practice treatment for sedentary patients. Results highlight that counselling patients on exercise effectively raises the levels of physical activity, reduces blood pressure and improves the quality of life of the patient.

Pryor, Carpenter and Townsend (2005) outline the mechanisms by which outdoor adventure activities constitute health promotion interventions. Outdoor adventure activities are shown to assist individuals towards ‘improved physical, mental, social, community and environmental health and well-being’ (p.4).

Doney and Packer (2008) evaluated the psychometric properties of the Australian version of the Activity Card Sort (ACS-Aus) designed to measure the activity participation of older adults. Participants in the study were older adults (aged 60-95, n=93) and results validated the effectiveness of the method of measurement. The study reinforced the World Health Organisation's promotion of participation in physical activity for the healthy ageing process.

Vaughan et al (Vaughan, Kilkkinen, Philpot, Brooks, Schoo, Laatikainen, Chapman, Janus, & Dunbar, 2008) assessed the physical activity behaviours of adults living in rural areas in the south-east of South Australia. In a randomly selected group of adults (n=1546), one-fifth were found to lead an inactive lifestyle. Rural areas were noted as having higher levels of chronic disease related to physical inactivity than other parts of Australia. Leisure-time physical activity was seen as having the greatest potential for improvements at a population level.

Therapeutic

The therapeutic benefits of outdoor adventure activities are found in the bush adventure therapy literature. Most findings highlight benefits at an individual level and relate to psychological and psychosocial domains. Therapeutic programs utilise a range of outdoor adventure activities to achieve their goals, and commonly include rural or remote area environments, challenge ropes courses, initiative tasks, bushwalking and expeditions, canoeing, and abseiling in the programs.

The benefits of bush therapy programs outlined in the following research are related generally to vulnerable populations such as at-risk youth and the mentally ill. The studies show greater benefits for individuals involved in longer outdoor programs, programs that integrate solo and reflective opportunities, and programs involving wilderness-based journeys (as opposed to residential and shorter term experiences).

Brand's PhD thesis (2000) was a longitudinal study of the effects of a Wilderness Enhanced Program (WEP) on behaviour disordered adolescents. The study had pre and post tests on a control (n=37), experimental (n=34) and reference group (n=43) with the Jessor and Jessor's Problem Behaviour Proneness Model as a guide for the self-report questionnaire. Thirty-one scales were developed that tested variables deemed to be good predictors of problem behaviour proneness. The subjects were tested five times over a two-year period. The study concluded that a WEP of two years duration did appear to cause significant changes in problem behaviour.

Martin and Legg (2002) conducted a mixed methods study comparing the personal development of adult participants on Outward Bound New Zealand courses of different durations (22 days n=54 and 9 days n=39). Findings from the data show the benefits of participation in the journey-based programs to be enhanced personal and interpersonal development. Both programs involved similar outdoor adventure activities (walking expeditions, sailing, kayaking, rock climbing, ropes courses) with the 22-day program including an additional 3 day solo and community service components. Greater change occurred for participants in the 22-day courses than for 9-day courses, highlighting program length as a determinant of effectiveness. Qualitative evidence highlighted areas of self-belief, confidence, communication, assertion, and inner strength that had been increased. Improved relationships with others (up to six months after course) were also noted. Results from the study highlighted the specific benefits of additional length of outdoor programs for promoting greater personal and interpersonal development, and the inclusion of activities that promote a supportive environment and safe challenging learning experiences as providing long term benefits for participants. The mixed methods study design was seen as a useful way to assess specific outcomes and processes and was recommended for future research.

Lan, Sveen and Davidson (2004) used a mixed methods study design to gauge the benefits for referred at-risk youth on a Project Hahn Wilderness Program in Tasmania. The wilderness journey-based program was derived from an Outward Bound Australia program to assist at-risk youth to make a healthy transition from adolescence to adulthood. The cohort consisted mostly of 13-15 year old males and females (2:1 male-female ratio) with varying sample sizes throughout the study (pre-intervention n=79; post n=61; follow-up n=34). A mixture of outdoor adventure activities was incorporated into the program with the overall results showing support for the ideals that wilderness programs are successful interventions for at-risk youth. Specific benefits for participants included greater self-actualisation (effect size of .49) and decreased hopelessness (effect size of .55), and transitory increase in sense of wellbeing. Reduced recidivism two years after intervention was also a significant finding from additional police data. The study design included both quantitative (recurrent

institutional design) and qualitative (open ended questions) methods and focused on the therapeutic benefits of the program for the at-risk youth.

Nicholls (2008) studied the benefits of bush adventure therapy on youths and young adults (n=18) participating in wilderness journey-based programs lasting 7-10 days in Tasmania (Project Hahn Wilderness Program). The study used a grounded theory approach and found that the activities of hiking, multi-night camping and abseiling had the effect of empowering participants towards functional change. The research highlighted the importance of structuring quiet times into outdoor adventure programs as being vital for the holistic development of outcomes for participants.

Nicholls and Gray (2007) used a grounded theory approach in their Australian study of at-risk youth on a wilderness journey-based program. The main outcome for this cohort of youth and adults (n=18, 16 males, 2 females) participating in a bush adventure therapy program were the personal benefits gained from the devotion to personal spaces and times (solo, stillness and quiet time). Learning from intense experiences required participants to have access to appropriate amounts and varieties of time and places. Outdoor adventure activities should not be primarily directed towards adrenalin, activity and action. Moreover, leaders should use quiet, inactive and reflective moments to consolidate learning and self-growth.

4.2.6. Economic and non-economic valuations of participation in outdoor activities

Economic

There has been little Australian or New Zealand research investigating the economic and non-economic benefits of participating in outdoor activities. A review of the size and scope of the cycle tourism industry in Australia (Faulks, Ritchie, & Fluker, 2007) highlights the paucity of local research. There has been previous New Zealand research that suggests that cycle tourists, while spending less per day than other international visitors, tended to stay longer and this resulted in a higher total spend (Ritchie, 1999).

To explore the economic impact of a multi-use rail trail in Victoria, Beeton (2006) surveyed 140 groups, accounting for 625 people, during Easter 2006. The length of journey on the trail ranged from 0.5 days to 30 days, with an average of two days. The average daily expenditure per person totalled \$258, of which \$27 was accommodation; \$147 on food and beverage; \$47 on transport; \$10 on cycling and \$27 on other. The average economic contribution per person (after the application of multipliers) was \$482.94.

In considering the impact of surf tourism, Dolnicar and Fluker (2003) have suggested that even though surfing is an estimated \$8 billion industry world-wide, there is little or no research on surf-tourism. An earlier paper has suggested that there are economic benefits that result from being known to have good beaches with good surfing conditions (Mead & Black, 2002), with surfing events providing the clearest evidence of economic benefits to a community. It was estimated that an event on the Gold Coast could result in a \$2.2M economic benefit to the local economy (Raybould & Mules, 1998).

Non-economic

In a meta-analysis of 19 New Zealand studies, Kaval and Yeo (2007) sought to estimate the non-market value of participating in outdoor recreation. For 2006, they estimated the non-market value of outdoor recreation in New Zealand to be NZ\$5.17 billion, with an average non-market value of NZ\$71/person/day. The activities with the highest daily value were tramping in Milford and mountain climbing.

Another perspective on the value of participation in outdoor activities is the social or community benefit. Faulks et al (2007, p. 11) note that research conducted on the Central Otago Rail Trail in New Zealand indicated that the range of social benefits to the community attributed to the rail trail, both as a resource and as a place of physical activity, included:

- Mental and physical well-being for participants;
- Education benefits regarding an understanding about working on a railroad;
- Bringing families together;
- Meeting like-minded people;
- Introducing new people into the community; and
- Generating a sense of pride and a heightened community identity.

5. Australia's efforts in relation to health and physical activity

Given the benefits noted from the research presented here, it is apropos to turn the attention to some other research that investigates those areas identified by the research as reasons for increasing involvement in the outdoors. The areas to be considered include the level of urbanisation of Australia's population, the health of Australians and the involvement in physical activity. Additionally, a summary is provided of some recent government initiatives to increase physical activity and involvement in the outdoors.

5.1. The urbanisation of Australia

Despite the belief that Australians have a strong connection to the bush, over the last century Australia has moved from a predominantly rural country to a highly urbanised one. In 1906 48.5% of Australians lived in towns of less than 3,000 people, by 1933 37.4% lived in rural areas, and by 1976 only 13.9% lived in rural areas. This has remained fairly constant since the 1970s, though there has been a move away from major cities from 57.6% in 1971 to 53.1% in 1996 (Australian Bureau of Statistics, 2001). Concurrently, there has been an increase in sea-change or tree-change, but these moves are still often to urbanised areas.

5.2. A health profile of Australia

In 2004-2005, 54% of Australian adults were considered overweight or obese, with more males being overweight or obese than females (62% compared to 45%) (Australian Bureau of Statistics, 2008). It was estimated that in 1995 (most recent figures available) 23% of Australia's children and adolescents are overweight or obese, with 6% being obese. In just one decade that was a doubling of the rate of those overweight and a tripling of those who were deemed to be obese (Waters & Baur, 2003).

The Black Dog Institute which specialising in researching and educating about mood disorders reports that around 20% of Australian adults have had a mental disorder during a 12 month period and that 14% of children and young adults have mental health problems. They further suggest that 18-24 year olds have the highest rate of mental disorders of any age group with suicide being the cause of over 25% of all deaths of males aged 20-24 years (Black Dog Institute, 2007).

5.3. Participation in physical activity and outdoor adventure activities

In a 1997 survey of over 2,000 Year 8 and Year 10 students in New South Wales schools it was found that during summer terms 80.9% and 85.9% of Year 8 and 10 boys respectively were adequately active as measured by the *Adolescent Physical Activity Recall Questionnaire*. While for girls, 80.8% and 77.7% of Year 8 and 10 respectively were adequately active (Booth, Okely, Chey, Bauman, & Macaskill, 2002). During winter, these figures dropped to 75.6% and 84.0% for the boys and 69.4% and 66.0% for girls. It was concluded that the majority of students were adequately active, however there were clear differences between boys and girls and there were significant differences for girls from different cultural backgrounds (e.g. Middle East and Asia) who would require more targeted approaches to encourage physical activity in the future. Other studies of adolescents' levels of physical activity levels have highlighted that there is a decrease with age, particularly for females (Martin, A. J., Tipler, Marsh, Richards, & Williams, 2006).

Given the concerns expressed in many of these previous reports about the level of physical activity and the suggestion that participating in outdoor activities can have life-long health and social benefits, it is important to consider the current participation levels of Australians.

There is little available Australian participation data to draw upon that is of relevance to outdoor adventure activities. The *Participation in Exercise, Recreation and Sport Survey Annual Report (ERASS)* (Australian Sports Commission, 2007) provides one annual source of information, though the detail is limited with respect to outdoor activities and only considers people aged 15 years and over. Those activities that are specifically referred to that are of relevance to this report are:

- Bushwalking;
- Canoeing/kayaking;
- Cycling (includes road cycling, mountain biking and BMX);
- Ice and snow sports (includes ice skating together with skiing and snowboarding);
- Rock climbing (includes both indoor or outdoor climbing);
- SCUBA; and
- Surf sports (includes sailboarding, surfing and wind surfing, but excludes surf life saving).

In the ERASS for 2006 (Australian Sports Commission, 2007) it was reported that 66.0% of people aged 15 years or over had participated in exercise, recreation or sport at least once per week during the previous 12 months. As shown in Table 7, of all activities (by number of participants), bushwalking, with 774,000 participants, was ranked eighth, ahead of major team sports such as soccer/football (697,400), netball (593,900), rugby league (209,800), and rugby union (165,300). The most popular activities overall were walking (6,001,700), aerobics/fitness (3,161,300), swimming (2,256,900) and cycling (1,682,800).

Participation rates across all activities were highest in the Australian Capital Territory, Western Australia and Tasmania, while New South Wales, Queensland, and the Northern Territory had the lowest participation rates. Without further information it is impossible to determine whether this is a result of resource access and availability, social factors or policy initiatives.

Table 7 Participation by people 15 years and over in selected outdoor activities, 2006

	All activities	Bush-walking	Canoeing/ Kayaking	Cycling	Ice/snow sports*	Rock climbing	SCUBA	Surf sports
	Participation: number ('000) (rate %)							
All people	13,356.6 (80.5)	774.0 (4.7)	121.9 (0.7)	1,682.8 (10.1)	177.7 (1.1)	80.3 (0.5)	78.3 (0.5)	386.1 (2.3)
By state								
ACT	232.9 (87.0)	20.9 (7.8)	1.8 (0.7)	44.8 (16.7)	7.3 (2.7)	2.2 (0.8)	0.7 (0.3)	2.9 (1.1)
NSW	4,403.1 (79.4)	277.2 (5.0)	52.7 (1.0)	487.6 (8.8)	90.4 (1.6)	52.3 (0.9)	27.9 (0.5)	181.2 (3.3)
NT	120.3 (79.3)	7.5 (4.9)	1.4 (0.9)	23.3 (15.4)	0.4 (0.2)	1.5 (1.0)	0.4 (0.2)	1.5 (1.0)
Qld	2,547.9 (79.4)	132.6 (4.1)	18.7 (0.6)	278.9 (8.7)	19.1 (0.6)	2.0 (0.1)	16.0 (0.5)	75.8 (2.4)
SA	1,101.2 (79.7)	53.8 (4.2)	14.7 (1.2)	117.0 (9.2)	5.4 (0.4)	1.7 (0.1)	3.8 (0.3)	18.8 (1.5)
Tas	316.8 (81.5)	35.2 (9.1)	5.9 (1.5)	40.6 (10.5)	1.6 (0.4)	2.1 (0.6)	3.8 (1.0)	6.7 (1.7)
Vic	3,359.0 (81.4)	183.3 (4.4)	7.4 (0.2)	491.3 (11.9)	43.4 (1.1)	15.0 (0.4)	13.1 (0.3)	43.8 (1.1)
WA	1,366.4 (83.6)	183.3 (4.4)	7.4 (0.2)	491.3 (11.9)	43.4 (1.1)	15.0 (0.4)	12.6 (0.8)	55.4 (3.4)
By gender								
Females	6,771.4 (80.5)	415.7 (4.9)	50.7 (0.6)	602.8 (7.2)	63.7 (0.8)	17.9 (0.2)	21.2 (0.3)	71.8 (0.9)
Males	6,585.2 (80.5)	358.4 (4.4)	71.1 (0.9)	1079.9 (13.2)	114.7 (1.4)	62.4 (0.8)	57.1 (0.7)	314.3 (3.8)
Mean frequency of participation during 12 mths		42.7	30.5	90.3	17.3	28.5	12.1	61.5
Non-organised activity		91.9%	81.3%	95.7%	87.8%	81.3%	74.2%	93.7%

* 2006 was a poor snow season resulting in lower participation levels, previous and subsequent years are around 228,000 people

Underlined: indicates participation rate is above national average

Source: Australian Sports Commission. (2007). *Participation in Exercise, Recreation and Sport, Annual Report 2006*, Tables 3, 16, 19, 23, 44-51.

Of the seven outdoor activities relevant to this report, cycling has the highest frequency of participation (90.3 times per annum), followed by surf sports (61.5), bushwalking (42.7) and canoeing/kayaking (30.5). SCUBA has the lowest level of the seven activities highlighted here (12.1 times per annum) (Table 7 and Figure 1). The activity with the highest level of participation in non-organised activity was cycling (95.7% of participants), followed by surf sports (93.7%) and bushwalking (91.9%). The most highly organised activity of the seven activities was SCUBA with 25.8% of participants being in organised activities. These latter results have implications for conducting research on benefits of participation with respect to how participants are accessed for the research, as well as implementing strategies to guide and inform people as to how they maximise their participation and outcomes.

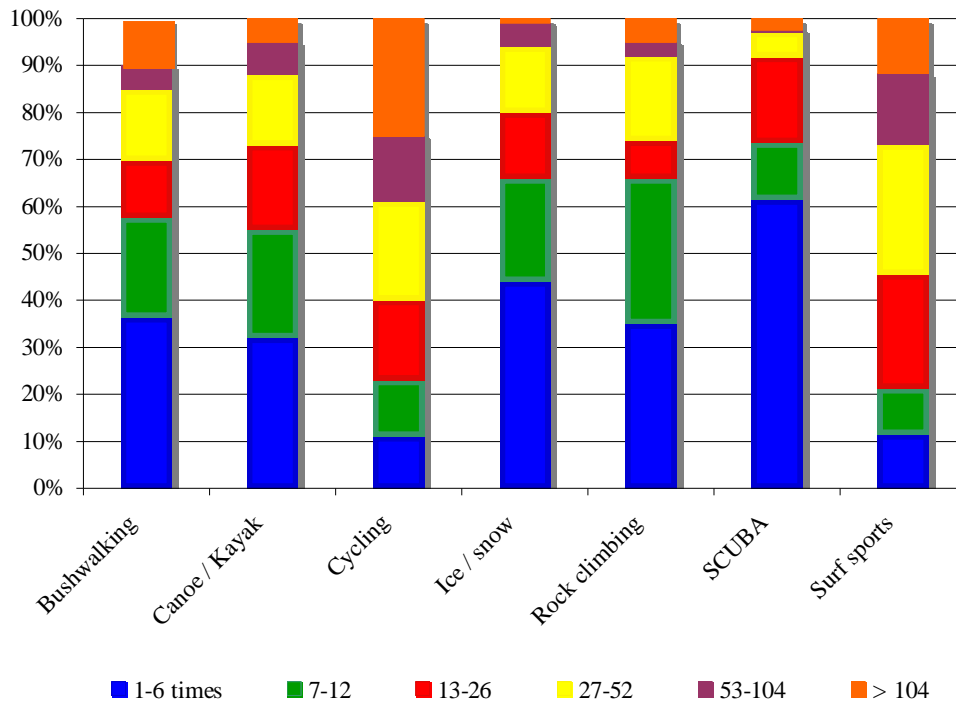


Figure 1 Frequency of participation in key outdoor activities, 2006

Source: Australian Sports Commission. (2007). *Participation in Exercise, Recreation and Sport, Annual Report 2006*

The *National Physical Activity Guidelines for Australians* (Department of Health and Ageing, 1999) recommends that adults participate in moderate intensity physical activity for 30 minutes per day at least five times per week. For children and adolescents, the recommendation is that they participate in moderate to vigorous intensity activity for at least 60 minutes every day of the week.

When exploring the only available Australia -wide data on the frequency of participation in any physical activity for the purposes of exercise, recreation or sport (Australian Sports Commission, 2007), the statistics for 15-24 year olds indicate that only 27% of females and 24% of males participate in physical activity the recommended five or more times per week (Figure 2). One in four 15-24 year olds do not participate in physical activity even at least once per week, let alone five times per week for 30 or 60 minutes each.

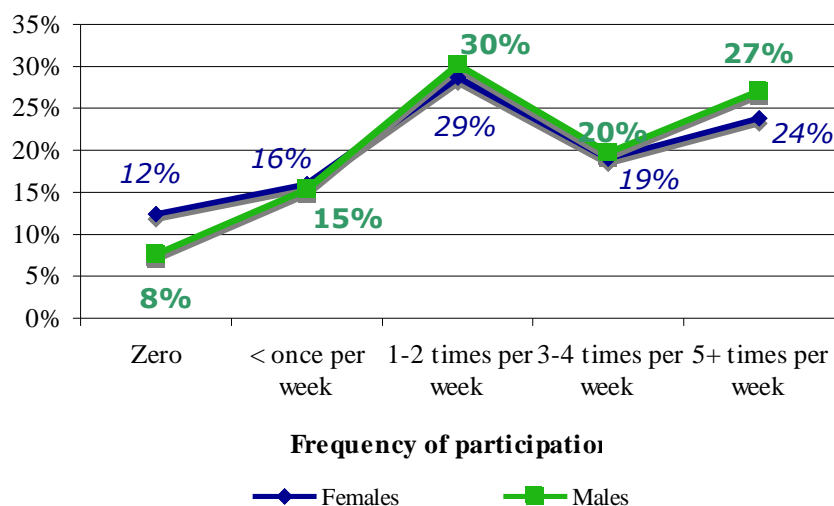


Figure 2 Frequency of participation in physical activity by 15-24 year olds, 2006

Source: Australian Sports Commission. (2007). *Participation in Exercise, Recreation and Sport, Annual Report 2006*

These results provide substantial evidence that there needs to be a broad-based approach to encourage participation in physical activities, including outdoor activities, in order for all Australians to achieve the minimum recommended levels of physical activity. This requires exploration of both the facilitators of, and constraints to, participation.

Three studies have been conducted in southeast Queensland (SEQ) to explore outdoor recreation demand during 1997, 2001 and 2007 (Kiewa, Brown, & Hibbins, 2002; Hales & Kiewa, 2007). These studies record the details of participation in a range of outdoor recreation activities including picnicking, walking or nature study, camping, bicycle riding, horse riding, water activities (e.g. swimming, surfing), driving 2WD, 4WD and other vehicles (e.g. trail bikes and quads) on unsealed roads, riding on motorised or non-motorised watercraft and abseiling/rock-climbing. In all three studies, respondents indicated whether they were participating in ‘somewhat natural’, ‘very natural’ or ‘totally natural’ surroundings and their preferred environment for participation. A further analysis of the three studies resulted in a trends analysis 1997-2007 (Hales 2007) which indicated that there has been a steady increase in participation rates in activities such as camping, bicycle riding and driving other vehicles on unsealed roads. Due to an overall increase in the population of SEQ, the overall number of activity events in the surveyed activities between 1997 and 2007 has risen from 19.9 million to 33.2 million per annum.

An additional Queensland report prepared as part of the *Active Trails Strategy* (Queensland Outdoor Recreation Federation, 2007) highlighted some of the issues around conducting outdoor recreation demand and participation research, such as the need for clearer definitions and sub-categories of activities. An example is cycling which, as previously noted, can include everything from road races to single track mountain biking on bush trails.

5.4. Facilitators and constraints to participation

Leisure research provides some insight into the barriers people may face when seeking to participate in physical activity. The five broad categories of barriers or constraints commonly identified in leisure research are:

- the costs of participating in leisure activities;
- lack of time and/or the pressure of other commitments;
- inadequate or inaccessible facilities;
- isolation (including social isolation and geographical isolation); and
- lack of skills and abilities (Hinch, Jackson, Hudson, & Walker, 2005).

The 2007 South east Queensland Outdoor Recreation Demand Study (Hales & Kiewa, 2007a) identifies that “no time, too busy” remains the largest constraint on people’s current participation and latent participation in SEQ. In almost all activities ‘family’ commitments have increased since the 2001 study, and the lack of places to do activities for people who currently participate is an increasing constraint in all activities. ‘Cost’ constraints in all activities (participants and non-participants) did not increase between 2001 and 2007. ‘Equipment’ constraints in current participation in horse riding and riding motorised water craft have increased over time. For non-participants who would like to participate more often, ‘equipment’ constraints are a large constraint for almost all activities. However, there have been no discernable trends over time. ‘Health’ constraints are increasing for current participants who would like to participate more, but are more of a constraint for non-participants who would like to participate. ‘Health’ issues are most pertinent for the activity of walking or nature study, a finding that may reflect the higher proportion of older people participating in that activity.

These broad categories of constraints are represented in a hierarchical model of leisure constraints first discussed in 1991 (Crawford, Jackson, & Godbey, 1991). Intrapersonal constraints are the attributes and preferences a person brings to their leisure choices; interpersonal constraints are a result of the interaction of various individuals’ characteristics, for example if it is not possible to find someone to participate with. Finally, structural constraints are related to the final hurdles one has to ‘jump’ in order to participate, such as time, money, and opportunity (Hudson, 2000).

There are close parallels for outdoor and experiential learning when considering how to facilitate ongoing leisure activity and negotiating constraints or barriers to participation. Raymore (2002), who was focusing on facilitators of participation, cited research that indicated that ‘the participation of friends, encouragement from friends, and the sharing of successful physical activity experiences of others are related to participation in physical activity of females adolescents’ (Raymore, 2002, pp. 47-48). Also important in adolescent participation was the involvement and role modelling of parents with their children. Structural facilitators of activity included the availability and accessibility of facilities, built and natural, as well as the social and cultural environment and how that supports physical activity by all. Raymore (2002) suggests that facilitators are more than motivations, they are the condition that exists, not the process by which that condition changes behaviour.

Typically, leisure constraints are represented in a linear model with each category of constraints impacting upon the participation process. However, if constraints and facilitators are considered together it may be more appropriate to show the interactions and impacts of each category. For example, structural constraints such as lack of time or motivation may be overcome by interpersonal facilitators such as social support systems (Figure 3).

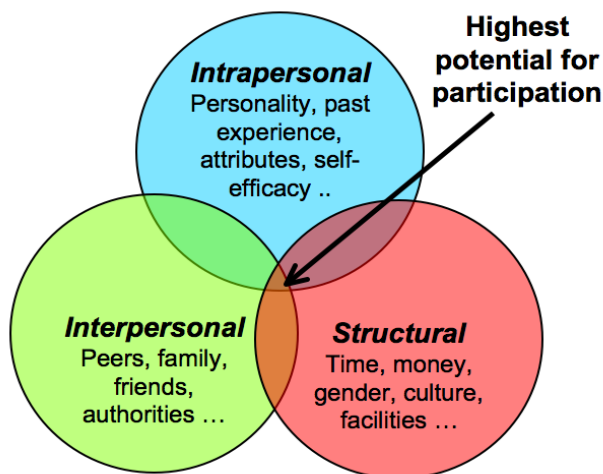


Figure 3 Leisure constraints and facilitators

Source: Based on Raymore (2002).

What this model highlights is the need for an integrated or holistic approach to participation, or as Raymore (2002) has termed it, an ecological approach. Thus, to maximise the benefits from participation in outdoor activities, participation strategies need to address all areas of both facilitators and constraints.

5.5. Recent Australian policies, strategies and activities promoting physical and outdoor activities

Over the last decade, there has been a range of State and Commonwealth government initiatives aimed at encouraging physical activity and being outdoors. Table 8 provides a snapshot of those strategies. While there have been numerous efforts to encourage participation in physical activity and outdoor activities, factors such as too narrow a focus, insufficient resources beyond the strategy or a lack of an ongoing commitment have impacted upon the achievement of permanent behaviour change.

Table 8 Examples of initiatives related to physical activity and being outdoors

	Policy, strategy or plan
Federal	<p>Active Australia</p> <ul style="list-style-type: none"> • 1996-2000: <i>Developing an active Australia: a framework for action for physical activity and health</i> (1998) • 2001-05: <i>Backing Australia's sporting ability: a more active Australia</i> (2001) <p>Australian National Cycling Strategy 2005-2010 www.austroads.com.au/abc/ National Physical Activity Guidelines for Australians, 1999 www.health.gov.au Environmental Education for a Sustainable Future: National Action Plan, 2000 www.environment.gov.au/education/publications/nap/</p>
ACT	<p>Program based upon Western Australian Department of Health's physical activity campaign <i>Find thirty. It's not a big exercise</i> www.find30.com.au/</p>
NSW	<p>Learning for sustainability: NSW Environmental education plan 2007-10 www.environment.nsw.gov.au/cee/lfs.htm Premier's Council for Active Living, 2007 www.pcal.nsw.gov.au</p>
NT	<p>Nutrition and Physical Activity Action Plans 2007-12 www.nt.gov.au/health/publications.shtml</p>
Qld	<p>Queensland Physical Activity Strategy 2001 – 06 (draft) Smart Moves - Physical Activity Programs in Queensland State Schools http://education.qld.gov.au South East Queensland Regional Outdoor Recreation Strategy: Discussion paper www.dip.qld.gov.au/regional-planning/outdoor-recreation-strategy.html Active trails: A strategy for regional trails in South East Queensland www.dip.qld.gov.au/regional-planning/active-trails-strategy.html</p>
SA	<p>Life Be In It www.sa.lifebeinit.org/default.php Physical Activity Strategy for South Australia. 2004-08 www.recreationsa.org</p>
Tas	<p>Tasmanian Physical Activity Plan 2005-10 Get Moving Tasmania www.getmoving.tas.gov.au</p>
Vic	<p>Go for your life www.goforyourlife.vic.gov.au Victorian Trails Strategy 2005-10 www.dse.vic.gov.au Active Melbourne Strategy, 2007 www.melbourne.vic.gov.au</p>
WA	<p>Be Active WA www.beactive.wa.gov.au Physical Activity Plan 2004-07 www.det.wa.edu.au/education/physicalactivity/</p>

6. Discussion and Future Research

6.1. Discussion

In the context of a society that is increasingly becoming disconnected from nature and experiences in natural environments, there is a great need for those in the outdoor industry (broadly defined) to be aware of the benefits achievable in the programs and opportunities they offer. This report has sought to take a broad view of the benefits of outdoor adventure activities to reflect the growing linkage in research between participation in out-of-doors activities and the health and wellbeing of individuals, communities, society and the environment.

Evidence from the research presented, previous international reviews and policy initiatives concur that engaging in physical activities in nature and with nature is beneficial for individuals and communities (for instance Holmes, 2007, Neill & Richards, 1998 and Pryor et al, 2005). In addition, the out-of-doors environment is shown to be an effective learning space for personal development.

The economic benefits of outdoor adventure activities are shown to be important for both the individual (improved health and wellbeing and therefore lower health care costs) and the community (income from tourism and recreation ventures). Additionally, the value people attribute to outdoor activities, purely as a result of doing them, can also be of benefit to individuals and communities.

6.2. Future Research

The Australian and New Zealand research exploring the benefits of outdoor adventure activities is generally of sound quality and is growing in quantity. More Australian and New Zealand research across the spectrum of the outdoor field is needed however to address the gaps identified in the preparation of this report. These gaps are evident in the areas of research scope and methodology, and can be explained by the size of the research community and the youth of the outdoor field in Australia. Additionally, gaps exist due to the lack of a strategic research agenda within which researchers, policy advisors, organisations and other stakeholders may locate their research, add to the broader knowledge base, contribute to filling some of the research gaps and to ultimately add to the benefits achieved through participating in outdoor adventure activities.

- **Setting the research agenda:** An interdisciplinary research workshop, supported by key stakeholders, would assist in generating a research agenda for the future. This agenda could consider needs at the organizational, local, community, state and national levels and seek to develop cross-community, interdisciplinary and international research networks. This workshop would also assist in identifying how each sector of the broad outdoor industry may benefit from one another, thus increasing the research capacity.
- **Research scope:** It is evident that more data need to be collected and analysed in Australia regarding the outdoor field, such as sector specific data e.g. number of organisations, employees/volunteers, participants, participation days, participation in each activity; fiscal value to the local and broader economy; and other operational areas. It is recommended that the scope of research should be integrated across state and national boundaries; social (e.g. health, wellbeing, justice issues), environmental (e.g. impact) and economic (e.g. size of industry, health benefits); and a comparative approach taken across countries. This could also include interdisciplinary research

such as between health and outdoor education, recreation planning and anti-social behaviour programs.

- Research methodology: The authors concur with the recommendations by Neill and Richards (1998) who call for ‘more detailed description of how programs are conducted and investigation of the role individual differences, such as personality and coping styles, have on outcomes’ (p.1). In addition, there is an urgent need for longitudinal research that assesses the ongoing benefits for individual involvement in physical activity beyond the life of the activity or the program. This could also investigate how benefits are transferred and sustained in participants’ lives.

It is recommended that research funding be procured to further the development of the research scope and methodologies to begin to fill these gaps and support the ongoing development and achievement of outdoor adventure activity opportunities that are beneficial to individuals, communities, society and the environment.

7. Conclusion

In the context of a society that is becoming increasingly disengaged with the natural world, and has poor physical activity levels and rising obesity rates, the outdoor industry is well placed to offer support to overcome these challenges. What is essential is that the outdoor industry continues to move beyond ‘testimonial support, anecdotal examples and passionate rhetoric’ (Neill and Richards, 1998, p.1) and works together to develop a broad array of research that demonstrates the benefits of participating in outdoor activities. This will also contribute to the growth and maturity of the industry across all sectors, from the volunteer and community groups to the large-school outdoor education and adventure tourism operations and include the land managers, policy makers and support services.

This report has compiled a comprehensive summary of the outcome-based research that has been generated since 1995. Inarguably, outdoor adventure activities have been shown to have a positive impact on *self*, *others* and the *environment*. The benefits of outdoor adventure activities are found within and across the diversity of programs that utilise such activities (e.g. recreation, leisure and sport, education, health and therapy), in the wide array of out-of-doors environments in which they take place, from pristine wilderness to urban nature parks. The most effective outdoor activities, as particularly supported by quantitative research using the LEQ, have been in structured programs:

- That are of longer duration (e.g. Neill and Richards, 1998; Martin and Legg, 2002);
- That are culturally appropriate (e.g. Booth, Okely, Chey, Bauman, & Macaskill, 2002; Purdie and Neill, 1999); and
- Where the effects appear to increase further over time (e.g. Brand, 2000, Gray, 1997, Neill and Richards, 1998).

However, given the scarcity of available Australian and New Zealand research, further research across those areas where there has been little focus, such as with independent and voluntary participants, and in family and community groups, in the context of a broader research framework, may reveal other benefits or strategies, not previously considered to date.

8. References

- Aldous, D. (2006). The benefits of green space: greening our cities and surrounds. *Australasian Parks and Leisure, Summer*, 6-8.
- American Camp Association. (2005). *Directions: Youth Development Outcomes of the Camp Experience*. Martinsville: American Camp Association.
- Australian Bureau of Statistics. (2001). Year Book Australia, 2001, Cat. no. 1301.0. Retrieved 16 April 2008, from <http://www.abs.gov.au/>
- Australian Bureau of Statistics. (2008). Overweight and Obesity in Adults, Australia, 2004-05, Cat. no. 4719.0. Retrieved 16 April 2008, from <http://www.abs.gov.au/>
- Australian Sports Commission. (2007). Participation in Exercise, Recreation and Sport, Annual Report 2006. Retrieved 11 January 2007, from <http://www.ausport.gov.au/scorsresearch/erass2005.asp>
- Bailey, P. (2004). *Rekindling the spirit of adventure – Through participation in the expedition component of the Duke of Edinburgh's Award. The value of this challenge for the participant*. Unpublished Ed.D., University of Wollongong, Wollongong.
- Ballantyne, R., & Packer, J. (2007). *Learning for sustainability: The role and impact of Outdoor and Environmental Education Centres - Draft Report*. Retrieved 8 April 2008, from <http://tourism.uq.edu.au/learning-for-sustainability/docs/Learning-for-Sustainability-Draft-Final-Report-Sep-07.pdf>.
- Beeton, S. (2006). *Regional Communities and Cycling: The case of the Murray to the Mountains Rail Trail, Victoria, Australia*. Retrieved 28 February 2008, from <http://www.latrobe.edu.au/tourism/assets/downloads/research/rail-trails.pdf>.
- Black Dog Institute. (2007). Facts & figures about mental health and mood disorders [Electronic Version]. Retrieved 16 April 2008 from <http://www.blackdoginstitute.org.au>.
- Booth, M. L., Okely, A. D., Chey, T., Bauman, A., & Macaskill, P. (2002). Epidemiology of physical activity participation among New South Wales school students. *Australian and New Zealand Journal of Public Health*, 26(4), 371-374.
- Boyle, I. (2002). *The impact of adventure-based training on team cohesion and psychological skills development in elite sporting teams*. Unpublished Ed.D., University of Wollongong, Wollongong.
- Brand, D. (2000). *A longitudinal study of the effects of a wilderness-enhanced program on behaviour-disorder adolescents*. Unpublished Ph.D., University of Wollongong, Wollongong.
- Brymer, E. (2005). *Extreme dude! A phenomenological perspective on the extreme sport experience*. Unpublished Ph.D., University of Wollongong, Wollongong.
- Bull, F. C., Bauman, A. E., Bellew, B., & Brown, W. (2004). *Getting Australia Active II: An update of evidence on physical activity for health*. Melbourne, Australia.: National Public Health Partnership.
- Canadian Parks/Recreation Association. (1997). 1997 Benefits of Parks and Recreation Catalogue. from <http://www.lin.ca/benefits-catalogue>
- Carson, D., & Gillis, H. L. (1994). A meta-analysis of outdoor adventure programming with adolescents. *Journal of Experiential Education*, 17(1), 40-47.
- Charles, C., Louv, R., Bodner, L., & Guns, B. (2008). *Children and nature 2008: A report on the movement to reconnect children to the natural world* Sante Fe, NM: Children and Nature Network.
- Council of Europe. (2008). The European Sport Charter. Retrieved 27 April 2008, from http://www.coe.int/t/dg4/sport/SportinEurope/charter_en.asp
- Crawford, D. W., Jackson, E. L., & Godbey, G. (1991). A hierarchical model of leisure constraints. *Leisure Sciences*, 13(4), 309-320.
- Crilley, G. (2007). Walking a shared path: what track and trail users and managers want to share. *Australasian Parks & Leisure*, 10(1), 9.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper Perennial.
- Darcy, S. (2003). The politics of disability and access: the Sydney 2000 Games experience. *Disability & Society*, 18(6), 737-757.
- Darst, P. W., & Armstrong, G. P. (1980). *Outdoor adventure activities for school and recreation programs*. Prospect Heights, IL: Waveland.
- Department of Health and Ageing. (1999). The National Physical Activity Guidelines for Australians. Retrieved 15 April 2008, from

<http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-phys-act-guidelines>

- Dickinson, S. (2000). An analysis and profile of major emotional episodes and their antecedents, on a six day wilderness expedition. *Australian Journal of Outdoor Education*, 4(2), 32-39.
- Dickson, T. J. (2007a). *Accessible summer alpine tourism - quality barrier-free tourism*. Canberra, ACT: Centre for Tourism Research, University of Canberra.
- Dickson, T. J. (2007b). *Mt Kosciuszko visitor experience survey during peak visitation periods: 2005-06* Canberra, ACT: Centre for Tourism Research, University of Canberra.
- Dickson, T. J. (2007c). Mt Kosciuszko: Wilderness Expectations and Experiences in a Non-Wilderness Area. *Australasian Parks and Leisure*, 10(3), 25-29.
- Dingle, P., & Kiewa, J. (2006). Links between kayaking, fear, confidence and competence: factors affecting women's participation in paddling in a tertiary outdoor education course. *Australian Journal of Outdoor Education*, 10(1), 46-53.
- Dolnicar, S., & Fluker, M. (2003). Behavioural market segments among surf tourists: investigating past destination choice. *Journal of Sport Tourism*, 8(3), 186-196.
- Doney, R. M., & Packer, T. L. (2008). Measuring changes in activity participation of older Australians: Validation of the Activity Card Sort - Australia.(Author abstract)(Report). *Australasian Journal on Ageing*, 27(1), 33(35).
- Dowling, R. K., & Nichol, J. (2001). The HMAS Swan Artificial Dive Reef. *Annals of Tourism Research*, 28(1), 226-229.
- Eglinton, C., & Broderick, P. (2008). Great outdoors: Outdoor education goes mainstream. *Teacher: The National Education Magazine*(Feb 2008), 44-47.
- Elley, C. R., Kerse, N., Arroll, B., & Robinson, E. (2003). Effectiveness of counselling patients on physical activity in general practice: cluster randomised controlled trial [Electronic Version]. *British Medical Journal*. Retrieved 24 February 2008 from www.bmj.com
- Ewert, A. W. (1989). *Outdoor Adventure Pursuits: Foundations, models, and theories*. Scottsdale, AZ: publishing Horizons, Inc.
- Faulks, P., Ritchie, B. W., & Fluker, M. (2007). *Cycle tourism in Australia: an investigation into its size and scope* Gold Coast: Cooperative Research Centre for Sustainable Tourism.
- Fluker, M. R., & Turner, L. W. (2000). Needs, Motivations, and Expectations of a Commercial Whitewater Rafting Experience. *Journal of Travel Research*, 38, 380-389.
- Giles-Corti, B., & Donovan, R. J. (2003). Relative influences of individual, social environmental, and physical environmental correlates of walking. (Author Abstract). *The American Journal of Public Health*, 93(9), 1583-1589.
- Gough, A. (2007). Outdoor and Environmental Studies: more challenges to its place in the curriculum.(Case study). *Australian Journal of Outdoor Education*, 11(2), 19(10).
- Gray, T. (1997). *The impact of an extended stay outdoor education school program on adolescent participants*. . Unpublished Ph.D., University of Wollongong, Wollongong.
- Haddock, C. (2007a). *Education outside the classroom (EOTC) survey: Primary schools report*. Wellington, NZ: Ministry of Education.
- Haddock, C. (2007b). *Education outside the classroom (EOTC) survey: Secondary schools report*. Wellington, NZ: Ministry of Education.
- Hales, R. & Kiewa, J. (2007). *South east Queensland outdoor recreation demand study 2007*. Brisbane, Qld: Department of Sport and Recreation
- Hales, R. (2007). *Outdoor recreation trends in south-east Queensland between 1997-2007*. Brisbane, Qld: Department of Sport and Recreation
- Hales, R. (2006). The rise of individualism. The implications for promoting relations between self, others and the environment in outdoor education. *Australian Journal of Outdoor Education*, 10(2), 53(59).
- Harris, C. (2006a). *Outdoor adventure and physical disability: Participants' perceptions of the catalysts of change*. Unpublished Ph.D., University of Queensland, Brisbane.
- Harris, C. (2006b). Outdoor adventure and physical disability: Participants' perceptions of the catalysts of change: PhD Summary [Electronic Version]. Retrieved 23 February 2008 from <http://www.outwardbound.co.nz/214.0.html>.
- Haskell, J. (2000). "The scent of my world": a student's perceptual knowing of outdoor experiencing. *Australian Journal of Outdoor Education*, 4(2), 40-48.
- Hattie, J., Marsh, H. W., Neill, J. T., & Richards, G. E. (1997). Adventure education and outward bound: out-of-class experiences that make a lasting difference. *Review of Educational Research*, 67(1), 43-87.

- Hinch, T., Jackson, E. L., Hudson, S., & Walker, G. (2005). Leisure constraint theory and sport tourism. *Sport in Society*, 8(2), 142-163.
- Holmes, R. (Ed.). (2007). *Reconnecting children through outdoor education*. Toronto, ON: Council of Outdoor Educators of Ontario.
- Hudson, S. (2000). The segmentation of potential tourists: Constraint differences between men and women. *Journal of Travel Research*, 38(4), 363-368.
- Kane, M. J., & Tucker, H. (2007). Sustaining adventure in New Zealand outdoor education: Perspectives from renowned New Zealand outdoor adventurers on the contested cultural understanding of adventure.(Report). *Australian Journal of Outdoor Education*, 11(2), 29-40.
- Kaval, P., & Yao, R. (2007). *New Zealand Outdoor Recreation Benefits*. Retrieved 5 February 2008, from <http://mngt.waikato.ac.nz/RePEc/wai/econwp/0714.pdf>.
- Kiewa, J., Brown, T. J., & Hibbins, R. (2002). *South-east Queensland outdoor recreation demand study: September - November 2001*. Milton, Qld: Queensland Outdoor Recreation Federation.
- Lan, P., Sveen, R., & Davidson, J. (2004). A Project Hahn empirical replication study. *Australian Journal of Outdoor Education*, 8(1), 37-43.
- Leberman, S. I., & Martin, A. J. (2003). Does pushing comfort zones produce peak learning experiences? *Australian Journal of Outdoor Education*, 7(1), 10-19.
- Lee, C.-K., & Taylor, T. (2005). Critical reflections on the economic impact assessment of a mega-event: the case of 2002 FIFA World Cup. *Tourism Management*, 26(4), 595-603.
- Little, D. E., & Schmidt, C. (2006). Self, wonder and God! The spiritual dimensions of travel experiences. *Tourism*, 54(2), 107-116.
- Lloyd, K., & Little, D. E. (2005). "Quality of Life, Aren't We Always Searching for That?": How Women Can Achieve Enhanced Quality of Life through Participation in Outdoor Adventure Recreation. *Leisure/Loisir: Journal of the Canadian Association for Leisure Studies*, 29(2), 147-181.
- Louv, R. (2006). *Last child in the woods*. Chapel Hill, NC: Algonquin Books of Chapel Hill.
- Lugg, A. (1999). Directions in outdoor education curriculum. *Australian Journal of Outdoor Education*, 4(1), 25-32.
- Mallar, C., Townsend, M., Brown, P., & St Leger, L. (2002a). *Health Parks Healthy People: The health benefits of contact with nature in a park context; Vol 1: A review of current literature*. Melbourne: Deakin University and Parks Victoria.
- Mallar, C., Townsend, M., Brown, P., & St Leger, L. (2002b). *Health Parks Healthy People: The health benefits of contact with nature in a park context; Vol 2: An annotated bibliography*. Melbourne: Deakin University and Parks Victoria.
- Martin, A., & Legg, S. (2002). Investigating the inward sounds of Outward Bound.(Outward Bound New Zealand). *Australian Journal of Outdoor Education*, 6(2), 27-36.
- Martin, A. J., Tipler, D. V., Marsh, H. W., Richards, G. E., & Williams, M. R. (2006). Assessing multidimensional physical activity motivation: A construct validity study of high school students. *Journal of Sport & Exercise Psychology*, 28(2), 171-192.
- McLeod, B., & Allen-Craig, S. (2007). What outcomes are we trying to achieve in our outdoor education programs?(Report). *Australian Journal of Outdoor Education*, 11(2), 41-49.
- Mead, S., & Black, K. (2002). *Multi-purpose reefs provide multiple benefits – Amalgamating coastal protection, high-quality surfing breaks and ecological enhancement to maximise user benefits and development opportunities*. Paper presented at the 2nd Surfing Arts, Science and Issues Conference.
- Mercer, D. (Ed.). (1994). *New Viewpoints in Australian Outdoor Recreation Research and Planning*. Williamstown, Vic: Hepper Marriot and Associates.
- Neill, J. T., & Richards, G. E. (1998). Does Outdoor Education Really Work? A summary of recent meta-analyses. *Australian Journal of Outdoor Education*, 3(1), 1-9.
- Nicholls, V. (2008). *Busy doing nothing: researching the phenomenon of "quiet time" in a challenge-based wilderness therapy program*. Unpublished Ph.D., University of Wollongong, Wollongong.
- Nicholls, V., & Gray, T. (2007). The role of stillness and quiet when developing human/nature relationships. *Australian Journal of Outdoor Education*, 11(1), 21-28.
- Outward Bound Australia. (2007a). *Bunbury Catholic College research report*. Tharwa, ACT: Outward Bound Australia.
- Outward Bound Australia. (2007b). *Canberra Girls Grammar Year 9 Outward Bound program*. Tharwa, ACT: Outward Bound Australia.

- Pryor, A., Carpenter, C., & Townsend, M. (2005). Outdoor education and bush adventure therapy: a socio-ecological approach to health and wellbeing. *Australian Journal of Outdoor Education*, 9(1), 3-13.
- Purdie, N., Neill, J. T., & Richards, G. E. (2002). Australian identity and the effect of an outdoor education program. *Australian Journal of Psychology*, 54(1), 32-39.
- Queensland Outdoor Recreation Federation. (2007). *Review of recreation participation and demand studies for trail-based recreation activities*. Milton, Qld: Queensland Outdoor Recreation Federation,.
- Raybould, M., & Mules, T. (1998). *Northern Gold Coast beach protection strategy: A benefit-cost analysis*. Gold Coast, Australia: Report prepared for Gold Coast City Council.
- Raymore, L. A. (2002). Facilitators to leisure. *Journal of Leisure Research*, 34(1), 37-51.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M. Y., Sanders, D., et al. (2004). *A review of research on outdoor learning*. Shrewsbury, UK: Field Studies Council.
- Ritchie, B. W. (1999). *Cycle Tourism in the South Island of New Zealand*. Unpublished PhD Thesis, University of Otago, Dunedin, New Zealand.
- Sport England. (1999). *Best value through sport: The value of sport*. London, UK: Sport England.
- Stiehl, J., & Parker, M. (2007). Individual outcomes of participating in adventure. In D. Prouty, J. Panicucci & R. Collinson (Eds.), *Adventure Education: Theory and applications* (pp. 63-76). Champaign, IL: Human Kinetics.
- Stolk, P., Markwell, K., & Jenkins, J. M. (2007). Artificial Reefs as Recreational Scuba Diving Resources: A Critical Review of Research. *Journal of Sustainable Tourism*, 15(4), 331-350.
- Vaughan, C., Kilkkinen, A., Philpot, B., Brooks, J., Schoo, A., Laatikainen, T., et al. (2008). Physical activity behaviours of adults in the Greater Green Triangle region of rural Australia.(Author abstract)(Report)(Survey). *Australian Journal of Rural Health*, 16(2), 92-99.
- Waters, E. B., & Baur, L. A. (2003). Childhood obesity: modernity's scourge [Electronic Version]. *Medical Journal of Australia*, 178 from <http://www.mja.com.au>.
- Webb, D. J. (1999). Recreational outdoor adventure programs. In J. C. Miles & S. Priest (Eds.), *Adventure programming*. State College, PA: Venture.
- Zink, R. (2005). Maybe what they say is what they experience: taking students words seriously. *Australian Journal of Outdoor Education*, 9(2), 14.

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