



Long-term outcomes of adventure, outdoor, and experiential education

Protocol for a review of existing evidence

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PROTOCOL



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1. The research focus

The Association of Sail Training Organisations (ASTO) and Sail Training International (STI) are aware of anecdotal evidence for the benefit of Sail Training for young people, but acknowledge that there is very little research which provides strong scientific evidence of its effect, particularly in the long term. Reasons for this might be the cost involved in measuring and evaluating an intervention long after it has finished, or the difficulty in getting responses from participants who might be hard to reach. Measuring short-term outcomes—i.e., immediately after the completion of the intervention—is more practical, but does not tell us about the maintenance or changes in intervention effects further in the future.

ASTO and STI have therefore commissioned this review of the existing literature ‘to identify key short-term outcomes that, if changed by an intervention, have been demonstrated to have a beneficial impact on longer-term outcomes such as attendance and/or attainment in education, employability, and mental health’.

Sail Training has a limited research literature. However Sail Training is only one type of outdoor learning that aims to improve young people’s life trajectory, moving them closer to employment and training. Other types include adventure training, ropes courses, challenge courses and experiential education. Therefore, a broader scope of residential, experiential education programme that involves outdoor adventure (hereafter referred to as adventure programmes) is likely to capture greater evidence about outcomes relevant to Sail Training.

There is a need to identify short-term outcomes that either last for months or years, or are associated with important long term outcomes. Our team considered three sources of information on such short-term outcomes in order to address this need:

1. systematic reviews of cohort studies addressing developmental outcomes for young people
2. studies conducted using cohort studies hosted by UCL Institute of Education
3. systematic reviews of the impact of adventure programmes (outdoor and residential).

Taking each of those possible sources in turn:

1. Preliminary searching for systematic reviews of cohort studies found that many such reviews focus on particular outcomes rather than providing a comprehensive analysis. Preparing a complete dataset would require extensive searching which would be very time consuming. Moreover, the populations in these studies may not match the populations of most interest, which are (a) young people not in education, training or employment; (b) identified by the primary study authors as young people from disadvantaged, deprived, or low socio-economic groups or geographical areas; or (c) young people with experience of engagement with the justice system.
2. Studies conducted using cohort studies hosted by UCL Institute of Education provide ready access to data that have been collected using rigorous methods but,

again, the populations in these studies may not have been exposed to adventure programmes.

3. Systematic reviews of adventure programmes overcome the problem of identifying populations exposed to an intervention. A recent study has identified 16 systematic reviews of outdoor learning, many of which included disadvantaged populations within their scope (Fiennes et al 2015). The question remains as to how many studies in relevant systematic reviews (including but not only Fiennes et al 2015) address the populations of interest exposed to adventure programmes and assessed long term outcomes.

This protocol therefore describes how we shall investigate those systematic reviews to identify short term outcomes associated with long term benefits of adventure programmes.

2. Aims

To identify short-term outcomes that are linked to long-term outcomes after the completion of an adventure programme. By extension, to develop a short list of short-term outcomes that are likely to be indicative of future maintenance or growth of intervention effects.

3. Research questions

Which outcomes show maintenance of adventure programme effects or increases in effects over time? A secondary research question: are any short-term outcomes linked to different outcomes at later measurement points?

4. Methods

4.1 Design

A rapid review of evaluations of adventure programme interventions that report both short and long-term outcomes.

4.2 Searching for studies

The resource constraints of this project have necessitated a pragmatic approach to identifying studies that includes three successive sifts: the first is identifying relevant systematic reviews; the second is finding primary studies that appear relevant from the review authors' description; and the third is inspecting the reports of the apparently relevant primary studies.

First sift

The first sift adopts four approaches to searching, which are elaborated on in the following sections:

1. Harvesting primary studies from published systematic reviews
2. Forward citation chasing of relevant reviews
3. Searching an existing database of outdoor learning studies
4. Hand searching through the Journal for Adventure and Experiential Outdoor Learning

We have already completed this initial sift. Taking those four search approaches in turn:

We have identified **systematic reviews** through searching various websites and databases; specifically, Web of Knowledge, ERIC through EBSCOhost, and Google Scholar. We used search terms related to adventure programmes (e.g., Sail Training, outdoor learning, adventure training, ropes course, challenge course, experiential education) and systematic reviews (e.g., systematic review, meta-analysis, literature review). The aim of this step was to capitalise on the systematic searches that have already been carried out for other reviews by identifying relevant primary studies included in those reviews.

Having identified a list of 21 reviews that appeared to be related to the topic (see Appendix A), we examined the reviews to see whether they included relevant interventions, reported long-term outcomes, *and* had studies with our population of interest. From this investigation, ***we identified five reviews that might contain relevant studies*** (Bowen & Neill, 2013; Durlak et al., 2010; Gillis & Spielman, 2008; Hattie et al., 1997; Rickinson et al., 2004).

To capture more recent research, we searched for papers citing the five apparently relevant systematic reviews (**forward citation chasing**) using Scopus, which claims to be the largest abstract and citation database of peer-reviewed literature, covering scientific journals, books and conference proceedings (<https://www.elsevier.com/solutions/scopus>).

We also contacted the authors of the five apparently relevant systematic reviews to determine (a) whether they have updated their research on this topic since publication and (b) whether they can provide information on the studies included in their reviews,

especially the population characteristics and presence of follow-up measures. Responses were received from all five review teams.

To maximise the likelihood of identifying evaluations of sailing-related interventions, we searched a **database of research on the topic of outdoor learning** that had been identified for a previous review conducted by members of this team¹. Searching this resource involved scanning titles in the database. Studies must have mentioned Sail Training, tall ships, or related seafaring programmes to be considered for full-text retrieval. The studies in this database are the product of systematic searches and have already been systematically classified; they thus represent a valuable shortcut to evidence.

We conducted **hand searching of the Journal of Adventure and Experiential Outdoor Learning** over the years 2003 to the current issue (and intend also to search issues from the journal's launch in 2000 to 2002). This journal is known to be particularly relevant to the topic and was searched to identify any relevant, recent Sail Training interventions.

The second sift

The above search processes identified a corpus of studies that appeared to be relevant. Helpfully, authors of two of the aforementioned systematic reviews (Bowen & Neill, 2013 and Gillis & Speelman, 2008) provided information about follow-up data and the population for each of their included studies, so we were able to pre-screen many of the studies using the reviewers' descriptions of the studies. From the five systematic reviews mentioned above, **we identified 36 primary studies that appeared to meet our criteria** and for which full-text documents should be retrieved.

An additional five primary studies on adventure programmes (including one specifically on Sail Training) which we found from searching the database of outdoor learning and the Journal of Adventure and Experiential Outdoor Learning, were also retrieved for full-text screening.

The third sift

The full text reports of the aforementioned 41 studies have not yet been inspected so we cannot yet be sure that they meet our review criteria. We therefore need to retrieve and then screen the full-text documents to ensure relevance. Relevance will be assessed against the inclusion criteria below.

4.3 Inclusion criteria

Based on the full-text documents, for primary studies to be included in the review, they must meet the following criteria:

1. Must be published in English language.
2. Must be published in 1995 or later.
3. Must be primary research of an empirical nature (not a literature review or opinion piece)
4. Must include the population: 12 to 25 year olds. Where a wide age range is included in the study, then only studies whose mean age falls within 12-25 years,

¹More detail is at www.giving-evidence.com/outdoor-learning

or that reports outcomes separately for one or more subgroups that fall within our range of interest, will be included.

5. Must include the population: (a) young people not in education, training or employment; (b) identified by the primary study authors as young people from disadvantaged, deprived, or low socio-economic groups or geographical areas; or (c) young people with experience of engagement with the justice system.
6. Must include the intervention: related to Sail Training, adventure programmes, ropes courses, and wilderness programmes. It must include an overnight component.
7. Must report outcomes measured for *either (or both)* of the following:
 - a. both immediate post-test (at the completion of the intervention) *and* long-term follow-up (at least 13 weeks or 3 months after the completion of the intervention) for *both* a treatment and a comparison group. (The value in limiting to studies with a comparator is that we can be more confident that any changes in the outcome over time are due to the effects of the intervention, rather than maturational or developmental changes.) These studies will be analysed using a “difference-in-differences” approach, which tests whether there are differences in the changes across time between the two groups. AND/OR
 - b. three time points (baseline, immediate post-test, and long-term follow-up). These studies will be analysed using a “time-series” approach, to see whether intervention effects are maintained, increased, or decreased at follow-up relative to post-test, taking into account the score at baseline.

For the purposes of identifying studies and for the analyses, ***we will not limit the outcome type***. Any outcome that is measured at both immediate post-test and long-term follow-up (i.e., at least 13 weeks / 3 months after the intervention ends) is potentially eligible for inclusion. This is because the purpose of this review is to identify *which* outcomes might be useful to measure in future research, rather than establish whether a particular outcome is benefited by such interventions.

For the purposes of identifying studies, initially we will not exclude studies without a comparator group. However, if we find sufficient studies with comparator groups, we will subsequently exclude studies without a comparator group. The problem with excluding non-comparator studies at the outset is that we might not have sufficient includable studies, plus there is likely to be some useful information to be gained from time-series designs (which do not have a comparison group). For the time-series designs, we will need three time points, so that we can establish whether the intervention had any immediate benefits and then whether the scores persisted, increased, or decreased at follow-up measurement.

4.4 Data extraction

Thanks to the helpfulness of Daniel Bowen, co-author of the Bowen and Neill (2013) review, we have a dataset that comprises most of the studies that we are likely to include in our review. This dataset includes their data extractions on a range of variables. For additional studies that we identify, we will extract the same information as Bowen and Neill in order to ensure comparability across studies. The data to be extracted are:

- Publication year
- Publication type
- Mean age and age category
- Sample sizes (total, and separately for intervention and control group)
- Gender (number of participants of each)
- Country
- Race
- Identified population (at-risk, clinical, adjudicated)
- Identified issue
 - Abuse Victims (Physical, Emotional or Sexual)
 - Adjudicated Youth
 - Behaviour Disordered
 - Disabilities
 - Educationally Disengaged
 - Emotionally Disturbed
 - Families
 - Mental Health
 - Mixed
 - Physical (e.g., Brain Injury, Weight-Loss, Etc.)
 - Substance Abuse
 - Welfare
- Funding type (private or public)
- Use of adventure as the therapeutic mode (primary or adjunctive)
- Program delivery (continuous or intermittent)
- Group structure (closed or open)
- Placement type (private or adjudicated)
- Program type (contained, continuous-flow, base-camp, residential, mixed)
- Program model (base camp, expedition, residential, outpatient, multiple, ropes/challenge/adventure-based)
- Daily duration
- Program length
- Methodological Quality Rating Scale (MQRS)
 - Study Design
 - Follow-up rate
 - Collaterals Interviewed
 - Objective Verification of Self-Report Data
 - Dropouts Discussed
 - Appropriate Analysis
- Outcomes
- Follow-up length (days) (NB. Must be at least 13 weeks or 3 months after the intervention finished).

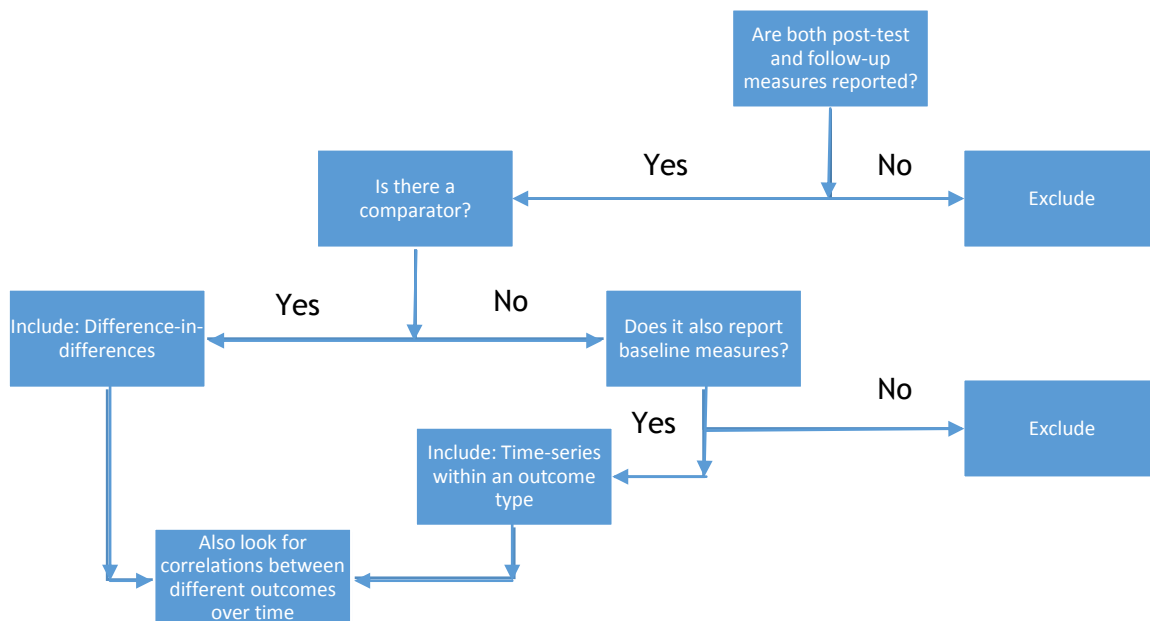
We will calculate effect sizes for each outcome within each study. Depending on what study designs we have in our dataset, we will either calculate a difference-in-differences score or time-series effect sizes (defined as the difference between the score at follow-up

and immediate post-test, taking into account whether benefits were observed relative to baseline).

We will also extract any information about correlations between variables over time, including longitudinal modelling. This will help us to understand whether any outcomes predict scores for other outcomes at a later time point. This might be particularly interesting where psychosocial outcomes (e.g., self-concept, family development), which are comparatively easily measured at immediate post-test, are modelled to see if they predict ‘hard’ outcomes (e.g., exam results, incarceration) in the long-term. These data points are also time-series in nature, but the focus is on relations between *different outcomes* over time, whereas the time-series data discussed previously focused on differences within the *same outcome* over time.

Figure 1 shows the three main types of quantitative data that we will extract and how this relates to the inclusion criteria.

Figure 1: Types of quantitative data that we will extract and how this relates to the inclusion criteria



4.5 Analysing the body of literature

Given that the purpose of the work is to identify a list of outcomes that might be of interest to measure at the short-term because of their association with longer-term benefits, meta-analysis is not necessary. We will assess whether there are demonstrable links between short term and longer term outcomes, through any of the methods mentioned above (differences-in-differences, time-series within an outcome, or through correlational/longitudinal analysis). ***We will produce a table that reports for each study the outcomes that have a demonstrable beneficial link between the short-term and the long-term measurement, alongside the effect size and the method for calculating the effect size*** (difference-in-differences, time-series, or correlations).

We will consider through cross-tabs and narrative synthesis whether characteristics of the studies or the participants are likely to be important when selecting outcomes to measure. Importantly, we will use the Methodological Quality Rating Scale to assess whether the evidence for each outcome is sound.

5. Contact details

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Appendix A: List of reviews that initially appeared to be related to the topic

Bartůněk D, Neuman J, & Martin AJ (2008). Applying meta-analysis to Czech outdoor research. *Horizons*, 43, 29-31.

Bowen DJ & Neill JT (2013). A Meta-Analysis of Adventure Therapy Outcomes and Moderators. *The Open Psychology Journal*, 6, 28-53

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Coalter F, Dimeo P, Morrow S, & Taylor J (2010). *The benefits of mountaineering and mountaineering related activities: a review of literature*. Stirling, UK: University of Stirling.

Cooley S, Burns V, Cumming J (2015). The role of outdoor adventure education in facilitating groupwork in higher education. *Higher Education* 69: 567-582.

Durlak JA, Weissberg RP, Pachan M (2010). A meta-analysis of after-school programs that seek to promote personal and social skills in children and adolescents. *Am J Community Psychology*, 45, 294-309

Gillis LH, Speelman E (2008). Are challenge (ropes) courses an effective tool? A meta-analysis. *J Exp Education*, 31(2), 111-35.

Hans TA (2000). A meta-analysis of the effects of adventure programming on locus of control. *J Contemp Psychother*, 30(1), 33-60

Hattie, J, Marsh, HW, Neill JT & Richards GE (1997). Adventure Education and Outward Bound: Out-of-class experiences that have a lasting effect. *Review of Educational Research*, 67, 43-87.

Higgins S, Katsipataki M, Kokotsaki D, Coe R, Major L E; Coleman R (2013). The Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit: Technical Appendices.

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McKenzie MD (2000). How are adventure education program outcomes achieved?: A review of the literature. *Australian Journal of Outdoor Education*, 5, 19-28.

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