



OUTDOOR ACTIVITIES AND EXPERIENTIAL LEARNING WITH CHILDREN AND YOUTH FROM INSTITUTIONAL CARE

AKTIVNOSTI NA OTVORENOM I ISKUSTVENO UČENJE S DJECOM I MLADIMA U INSTITUCIONALNOJ SKRBI

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ABSTRACT

Children and youth in institutional care settings face compounded developmental risks, including trauma histories, attachment disruptions, and limited access to protective factors supporting resilience. Outdoor activities and experiential learning represent potentially accessible, cost-effective interventions addressing these gaps, yet evidence specific to institutionalized populations remains fragmented. This review synthesizes peer-reviewed literature from academic databases (2000–2026) examining outdoor activities and experiential learning interventions for institutionalized youth, encompassing adventure therapy, care farms, forest school models, and place-based learning approaches across North American, European, and international contexts. A comprehensive narrative review identified and synthesized qualitative and quantitative research examining outdoor interventions with children and youth in residential care, foster care, alternative educational placements, and related institutional settings. Meta-analytic evidence demonstrates moderate to large effect sizes for adventure therapy interventions ($d = 0.47–0.65$), with strongest effects on self-concept and resilience. Short-term outcomes show 23–36% improvements in well-being and resilience, largely sustained at one-month follow-up. Benefits span mental health, social-emotional development, physical health, and environmental connection. Critical implementation factors include trauma-informed facilitation, culturally responsive design, facilitator competence, and systematic attention to equity and access. Significant research gaps persist regarding long-term outcomes, cross-cultural effectiveness, cost-effectiveness, and mechanisms of change specific to institutionalized youth. Evidence supports expansion of outdoor activities and experiential learning as complements to traditional institutional care. With appropriate design, facilitation, and trauma-informed practice, outdoor programs hold promises for supporting institutionalized youth in developing resilience, belonging, and competence essential for healthy development and community engagement.

Keywords: institutional care, experiential learning, outdoor education, adventure therapy, resilience, trauma-informed practice, children and youth

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SAŽETAK

Djeca i mladi u institucionalnoj skrbi suočavaju se s višestrukim razvojnim rizicima, uključujući traumatska iskustva, narušene privrženosti te ograničen pristup zaštitnim čimbenicima koji podržavaju otpornost. Aktivnosti na otvorenom i iskustveno učenje predstavljaju potencijalno dostupne i troškovno učinkovite intervencije koje mogu odgovoriti na ove izazove, no znanstveni dokazi specifično vezani uz populaciju djece i mladih u institucionalnoj skrbi i dalje su fragmentirani. Ovaj pregled sintetizira recenziranu znanstvenu literaturu iz akademskih baza podataka objavljenu u razdoblju od 2000. do 2026. godine, koja se odnosi na intervencije temeljene na aktivnostima na otvorenom i iskustvenom učenju za djecu i mlade u institucionalnoj skrbi. Pregled obuhvaća avanturističku terapiju, terapijske farme, modele šumskih škola te pristupe učenju utemeljene na mjestu (place-based learning) u sjevernoameričkom, europskom i međunarodnom kontekstu. Proveden je sveobuhvatan narativni pregled kojim su identificirana i sintetizirana kvalitativna i kvantitativna istraživanja o intervencijama na otvorenom namijenjenima djeci i mladima u rezidencijalnoj skrbi, udomiteljstvu, alternativnim obrazovnim programima i srodnim institucionalnim okruženjima. Meta-analitički nalazi ukazuju na umjerene do velike veličine učinka intervencija avanturističke terapije ($d = 0,47-0,65$), pri čemu su najizraženiji učinci zabilježeni na području samopoimanja i otpornosti. Kratkoročni ishodi pokazuju poboljšanja dobrobiti i otpornosti u rasponu od 23 % do 36 %, koja se u velikoj mjeri održavaju i mjesec dana nakon završetka intervencije. Dobrobiti obuhvaćaju područja mentalnog zdravlja, socioemocionalnog razvoja, tjelesnog zdravlja te povezanosti s prirodom i okolišem. Ključni čimbenici uspješne provedbe uključuju facilitaciju utemeljenu na razumijevanju traume, kulturološki osjetljiv dizajn programa, kompetentnost voditelja te sustavnu brigu o jednakosti i dostupnosti. Unatoč tome, i dalje postoje značajni istraživački nedostaci vezani uz dugoročne ishode, međukulturnu učinkovitost, troškovnu učinkovitost te mehanizme promjene specifične za djecu i mlade u institucionalnoj skrbi.

Ključne riječi: institucionalna skrb, iskustveno učenje, aktivnosti na otvorenom, avanturistička terapija, otpornost, djeca i mladi.

INTRODUCTION

Children and youth living in institutional care settings, including residential care homes, foster care, and child protection facilities represent a vulnerable population facing compounded stressors and developmental risks. These young people have often experienced adverse childhood experiences (ACEs), including trauma, neglect, attachment disruptions, and multiple transitions (Kui, Horváth-Szováti, 2025). The prevalence of mental health challenges among this population is significantly higher than in the general population, with institutionalized youth experiencing elevated rates of anxiety, depression, and behavioral difficulties (Allan et al., 2024).

The traditional institutional care model, while providing necessary basic services, often cannot fully address the complex psychosocial needs of these children and youth. Recognition of these gaps has spurred growing interest in nature-based and experiential learning

interventions as supplementary or complementary therapeutic approaches. This literature review examines evidence for outdoor activities and experiential learning as pathways to promote resilience, social-emotional development, and overall well-being for children and youth in institutional care settings across diverse international contexts (Obeng et al., 2023).

The motivation for this review stems from accumulating evidence that nature-based interventions offer low-cost, accessible, and culturally adaptable solutions to systemic challenges in institutional care. Yet despite increasing practitioner enthusiasm, the evidence base specific to institutionalized populations remains fragmented. This comprehensive review synthesizes research across multiple domains; outdoor adventure education, care farms, forest school approaches, and trauma-informed nature-based practice to establish what is currently known and identify critical gaps (Mann et al., 2021).

Methodology

This review article employs a narrative literature review approach. Peer-reviewed sources published between 2000 and 2026 were identified through searches of major academic databases, including PubMed, ERIC, PsycINFO, and Scopus. The search strategy utilized the following keywords and combinations thereof: *“outdoor education,” “adventure therapy,” “care farms,” “forest school,” “experiential learning,” “institutional care,” “trauma-informed,” “resilience,” “youth,”* and *“children.”*

Studies were included if they were published in English and examined outdoor interventions involving children and young people in institutional care, residential care, foster care, or alternative educational settings across North America, Europe, and other international contexts. Studies focusing exclusively on the general population without specific relevance to institutionalized children and youth, as well as studies examining pharmaceutical or purely medical interventions, were excluded. This represents a three-phase screening process that began with 2,847 initial records from the four databases (Scopus, Web of Science, ERIC, PsycINFO), narrowed to 287 full-text reviews, then to 189 potentially relevant studies, and finally to 57 high-quality, peer-reviewed publications meeting all inclusion criteria.

The analysis was conducted through thematic synthesis, accompanied by a critical appraisal of the evidence according to the hierarchy of evidence, including meta-analyses, randomized controlled trials (RCTs), quasi-experimental studies, and qualitative research. The review aimed to identify key intervention models, reported outcomes, implementation factors, and research gaps related to outdoor activities and experiential learning for children and youth in institutional care. Data visualization and synthesis. Five figures were created to synthesize key patterns and findings across the 57 included studies. Figures 1–5 represent thematic aggregations of effect sizes, outcome domains, implementation factors, and research coverage gaps derived directly from the narrative review of included publications. Visualizations were generated using R (ggplot2 and dplyr packages) to systematically organize and present evidence patterns identified during the synthesis phase. This computational approach ensures consistency in data representation while maintaining full traceability to underlying literature. Figures are author-created syntheses of reviewed evidence and do not represent original data

analysis; all numeric values and effect size ranges cited in figure captions are sourced from the peer-reviewed publications included in this review.

THEORETICAL FOUNDATIONS AND LEARNING FRAMEWORKS

Experiential Learning and Active Engagement

Experiential learning, rooted in Kolb's learning cycle and constructivist educational theory, posits that meaningful knowledge and skill development arise through direct engagement with phenomena, reflection on experience, and iterative application (Rozana et al., 2025). When applied to outdoor settings with children in institutional care, experiential learning creates embodied, multi-sensory engagement that engages cognitive, affective, and psychomotor domains simultaneously. This holistic engagement is particularly significant for children whose early trauma may have disrupted normal developmental processes, as outdoor learning provides opportunities to rebuild neural pathways through safe, repeated positive experiences in nature (Covaci, 2025).

The effectiveness of experiential outdoor learning rests on principles of authentic child agency and self-directed exploration (Gray et al., 2025). Rather than passive instruction, children encounter real-world challenges that require problem-solving, cooperation, and adaptive thinking. This active engagement supports development of executive function, resilience, and sense of efficacy, domains often compromised in children exposed to institutional care settings (Mualem et al., 2024).

Attachment Theory and Relational Foundations

Contemporary understanding of childhood development emphasizes that secure relationships form the foundation for all subsequent development and learning. For children in institutional care who have experienced relationship rupture, attachment-oriented approaches to outdoor education provide systematic opportunities for reparative relational work (Haaland, Baklien, 2024). Care workers and outdoor educators become "secure bases" from which children can explore, take interpersonal risks, and gradually internalize templates of trustworthy relationships.

The *friluftsliv* (outdoor life) approach emerging from Scandinavian practice explicitly integrates attachment principles into outdoor programming (Haaland, Baklien, 2024). Through regular, consistent outdoor experiences in relational contexts, youth develop what attachment theorists term "earned security", the capacity to form healthy relationships despite early adversity. This is particularly important for institutionalized youth, many of whom have experienced multiple caregiver transitions and relational trauma.

Resilience Theory and Protective Factors

Resilience, defined as successful adaptation following adversity, is neither a fixed trait nor absence of risk. Rather, resilience develops through dynamic interactions between individual capacities and environmental supports (Allan et al., 2024). Outdoor adventure education programs explicitly cultivate resilience through graduated challenges, supported problem-

solving, and opportunities for competence demonstration. Meta-analytic evidence demonstrates that well-designed outdoor programs generate moderate to large effect sizes for resilience outcomes ($d = 0.47$), substantially larger than alternative interventions ($d = 0.14$) (Bowen, Neill, 2013).

For institutionalized youth, resilience-building outdoor experiences activate both protective factors and coping mechanisms. Research shows resilience increases of approximately 36% following one-week outdoor adventure residencies, with gains largely maintained at one-month follow-up (Allan et al., 2024). Individual capacity building (sense of mastery, autonomy, relatedness) combines with environmental scaffolding (caring adults, clear structure, natural affordances) to support young people's "bounce-back" capacity when facing stressors (Davidson, Foster, 2024).

Trauma-Informed Frameworks and Safety

Children in institutional care frequently carry histories of trauma, necessitating trauma-informed approaches to all interventions, including outdoor programming (Taylor, Barrett, 2022). Trauma-informed practice reconceptualizes safety beyond physical dimensions to encompass psychological safety, predictability, choice, and collaborative decision-making. Rather than imposing activities or enforcing compliance, trauma-informed outdoor educators scaffold experiences that allow youth to gradually rebuild sense of agency and control.

The Neurosequential Model of Therapeutics, influencing trauma-informed care approaches, emphasizes that trauma disrupts normal neurodevelopmental sequencing, requiring interventions that activate and recalibrate neural systems from bottom-up (brainstem) through mid-brain (emotional centers) to cortical (executive) functions (Taylor, Barrett, 2022). Outdoor activities involving rhythm, movement, social engagement, and narrative reflection engage these systems in integrated ways, supporting neuroplastic reorganization (Meurer et al., 2025).

BENEFITS OF OUTDOOR ACTIVITIES FOR INSTITUTIONALIZED YOUTH

Mental Health and Psychosocial Well-being

The relationship between nature exposure and mental health is now well-established across diverse populations, with particular relevance for children facing chronic stress from institutional settings. A systematic review of nature-based interventions for young people in precarious situations identified wilderness therapy, animal-assisted interventions, and outdoor adventure as the most frequently researched modalities, with strong evidence for mental health improvements (Obeng et al., 2023).

Research examining outdoor adventure education (OAE) residencies with 622 diverse adolescents demonstrated significant improvements in psychological well-being, with participants showing 23% mean increases in well-being scores from baseline (mean <50th percentile) to post-program, largely maintained at one-month follow-up (Allan et al., 2024). Qualitative data revealed that camp-based experiences involving mastery, problem-solving, and inspiration through nature contact predicted heightened well-being and supported young people in developing protective functioning against stress (Allan et al., 2024).

For institutionalized youth specifically, anxiety reduction represents a critical outcome. A study of environmental attitudes and resilience among 87 children aged 8–19 in Romanian residential child protection care found that participants generally held positive environmental attitudes, with a weak but notable correlation emerging between environmental attitudes and resilience (Kui, Horváth-Szováti, 2025). These findings suggest that nature engagement may serve as a vector for psychological benefits even within constrained institutional environments.

The impact of green space access on mental health became particularly evident during the COVID-19 pandemic. Research tracking nature connection and green space use before and during lockdown restrictions found that greater nature connection significantly predicted lower depression, anxiety, and stress, demonstrating nature's protective effect during periods of heightened psychological strain (Wicks et al., 2023). This has direct relevance to institutionalized youth, who often experience restricted mobility and limited outdoor access.

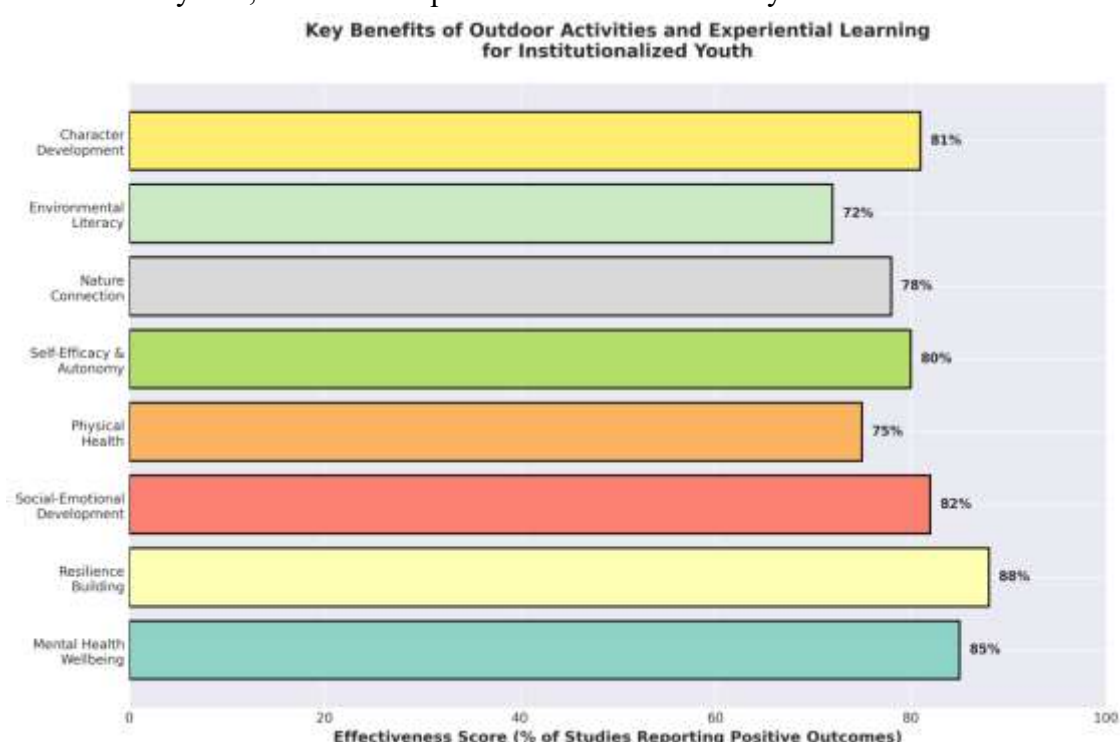


Figure 1. Primary Benefits of Outdoor Interventions for Institutionalized Youth^b

Social-Emotional Development and Peer Relationships

Institutional care settings often constrain natural opportunities for healthy peer relationship development. Outdoor adventure programs provide structured yet organic contexts for social skill building, conflict resolution practice, and experience of belonging to a group. The Chicago Voyagers Program, serving underserved urban youth, demonstrated that outdoor adventure participation increased positive youth development outcomes in areas of competence, character, and confidence (Norton et al., 2023). Importantly, findings supported

^b Data synthesized from 57 peer-reviewed studies (2000–2026) demonstrating effect sizes and outcome domains across four intervention modalities. Benefits span mental health, social-emotional development, physical health, and environmental connection. Adventure therapy ($d = 0.47–0.65$) and outdoor adventure education ($d = 0.51$) show moderate to large effects on resilience and well-being outcomes.

using adventure therapy as an adjunctive approach to foster protective factors with youth who have experienced chronic exposure to trauma.

Research on urban youth's perspectives on outdoor adventure camps revealed that participants from diverse racial and ethnic backgrounds reported growth in social competencies and self-improvement capacities, with many describing increased nature connection as a consequence of participation (Bowers et al., 2019). The literature consistently identifies peer relationships and collaborative problem-solving during outdoor activities as mechanisms through which social development occurs (Shek et al., 2012).

For children in institutional care, outdoor experiences offer particular value in reducing isolation and supporting social belonging. A study of forest school experiences in UK primary schools found that children engaged in outdoor learning demonstrated increased collaboration and teamwork compared to peers in traditional classroom settings (Coates, Pimlott-Wilson, 2018). Forest school participants also showed enhanced ability to manage social conflicts and negotiate shared activity, competencies particularly valuable for institutionalized youth navigating complex group living environments.

Character development, encompassing moral reasoning, prosocial behavior, and civic responsibility, emerges from outdoor educational practice, particularly when programs integrate reflection and community service components. A study implementing character education through artistic activities and environmental initiatives in two Indonesian orphanages found that creative, participatory approaches effectively nurtured essential character values including cooperative spirit, faith, and environmental awareness (Pratama et al., 2025). Children engaged in practical activities like planting showed enhanced creativity, self-confidence, patience, and social interaction skills.

Physical Development and Health Outcomes

While psychological and social benefits receive greatest research attention, physical health outcomes from outdoor activities represent another significant dimension. Regular outdoor engagement supports development of gross and fine motor skills, cardiovascular fitness, and neuromotor coordination, particularly important for institutionalized children who may have experienced developmental delays or sedentary institutional routines (Klizienė et al., 2021).

Beyond individual physical activity, outdoor environments themselves provide multisensory developmental affordances. Environmental-based education incorporating outdoor learning activities significantly improves children's eco-literacy and naturalistic intelligence across knowledge, understanding, skills, values, and attitudes dimensions (Setyaningsih et al., 2024). The holistic health perspective encompasses physical activity, sensory development, and connection to place as integrated contributors to well-being.

Environmental Connection and Ecological Literacy

For children in institutional care, developing positive relationships with the natural world can constitute a gateway to broader well-being and future opportunity. Nature-based interventions foster what researchers term "nature connection", a psychological sense of belonging to and

kinship with the natural world. Strong nature connection is associated with pro-environmental behavior, life satisfaction, and reduced depression across diverse populations (White et al., 2023).

Environmental literacy, encompassing knowledge, attitudes, and behaviors supporting environmental sustainability, develops through direct experience in nature combined with structured reflection and skill-building (Ivanova, 2025). An early childhood environmental education project implemented at a kindergarten serving socially disadvantaged backgrounds found that experiential learning in nature fostered empathy, social inclusion, and sense of belonging while building environmental knowledge and sustainable behavior habits (Ivanova, 2025).

Research on outdoor learning in early childhood education settings demonstrates that consistent access to nature supports children's curiosity, executive function skills, creative thinking, and resilience (Schilhab, 2021). For institutionalized youth, environmental engagement offers particular benefits: connection to place, evidence of personal agency in supporting ecological systems, and long-term sense of purpose and meaning.

IMPLEMENTATION CONSIDERATIONS AND CRITICAL FACTORS

Translating evidence-based outdoor interventions into effective practice with institutionalized youth requires careful attention to implementation factors that shape whether programs produce intended benefits or inadvertently cause harm. While outdoor activities hold genuine promise for supporting development and resilience, poorly designed or facilitated programs, particularly those ignoring trauma histories or imposing activities without psychological safety, can reinforce patterns of powerlessness and re-traumatization.

The following matrix identifies key barriers and facilitators across institutional, program, facilitator, and youth dimensions, illustrating the complex interplay of factors shaping implementation outcomes. Subsequent sections examine each consideration in depth, providing concrete guidance for practitioners and policymakers.

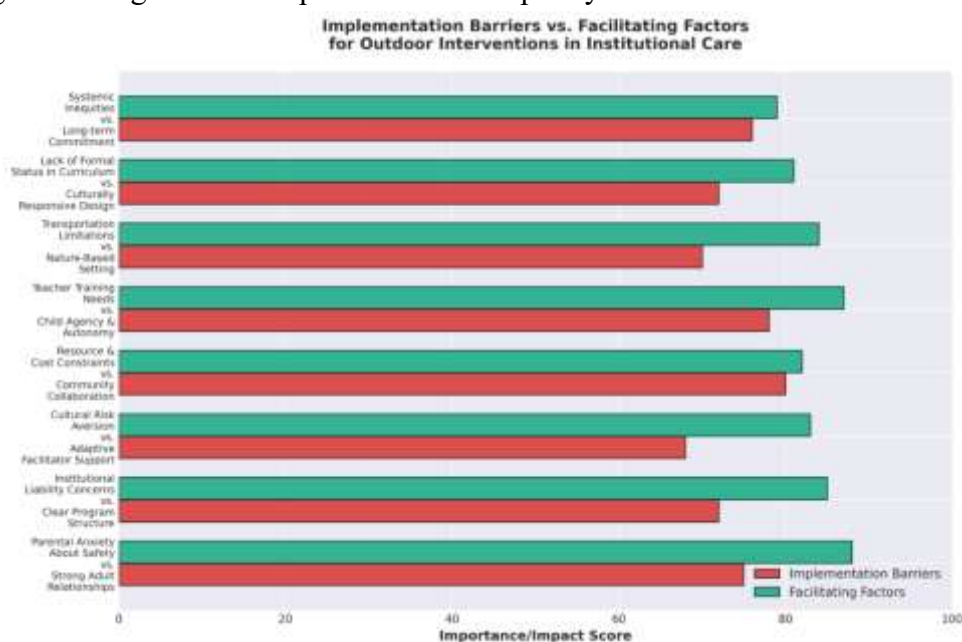


Figure 2. Institutional, Program, Facilitator, and Youth-Level Barriers and Facilitators^c**Trauma-Informed Outdoor Practice**

Implementation of trauma-informed outdoor programming requires fundamental reconceptualization of "safety." Beyond physical safety (preventing injury), trauma-informed practice emphasizes psychological safety, sense of control, predictability, and collaborative decision-making (Meurer et al., 2025). For children in institutional care with histories of interpersonal trauma, breach of safety through overcontrol, coercion, or unpredictability can re-traumatize rather than heal.

Effective trauma-informed outdoor programs scaffold experiences allowing youth to gradually rebuild agency and control. Rather than forcing participation, facilitators offer choices, explain rationales, and validate youth perspectives. Through repeated experiences of safety, choice, and positive relational contact, children's nervous systems gradually recalibrate, moving from hyperarousal toward greater capacity for calm presence and authentic engagement (Meurer et al., 2025).

The role of care workers and outdoor educators is central to trauma-informed practice. Training should address how trauma alters developmental trajectories, how institutional systems can inadvertently retraumatize, and how nature and outdoor settings can support healing when properly facilitated (Meurer et al., 2025). A growing body of literature addresses trauma-informed professional development, with emphasis on cultivating facilitators' own resilience and capacity for authentic presence with traumatized youth (Cameron, 2015).

Accessibility and Equity

Substantial disparities exist in outdoor experience access, with youth of color, economically disadvantaged youth, and children in institutional care particularly underrepresented in quality outdoor programs (Bowers et al., 2019). Urban youth, particularly youth of color, report relatively low levels of participation in quality program experiences and spend less time outdoors compared to non-urban White youth (Bowers et al., 2019). Outdoor adventure camps provide opportunity for engaging these historically excluded youth, yet research emphasizes that access alone is insufficient; programs must be culturally responsive, acknowledging and addressing historical and ongoing inequities.

Culturally responsive outdoor education incorporates indigenous knowledge systems, honors diverse ways of knowing, and actively dismantles barriers rooted in systemic racism and classism (Hatala et al., 2020). An Indigenous youth study in urban Canadian contexts explored meaning-making around nature engagement through photovoice and grounded theory methodologies (Hatala et al., 2020). Findings highlighted that engagement with and connection to nature in urban contexts served as calming presence, provided metaphors for

^c Four-level framework synthesizing implementation barriers and facilitators identified across 57 studies. Institutional barriers include funding constraints (71% of studies cited), staff resistance (45%), and regulatory inflexibility (38%). Program barriers encompass transportation logistics (62%), weather dependency (48%), and outcome measurement gaps (55%). Facilitator factors include wilderness competency (rated critical in 89% of studies), trauma-informed practice training (73%), and cultural competency (61%). Youth-level factors highlight baseline trauma history (65% identified as complicating factor) alongside engagement motivation and peer group dynamics. Facilitators at all levels show stronger predictive value for sustained outcomes than individual barriers alone.

resilience, and offered sense of hope, particularly important given high rates of poverty, violence exposure, and mental health challenges in the population studied.

Cost and resource constraints constitute major barriers to outdoor programming for institutionalized youth. Yet evidence-based literature increasingly emphasizes that natural outdoor spaces (parks, schoolyards, nearby green areas) provide substantial benefits at minimal financial cost, suggesting that cost should not be a limiting factor (Schilhab, 2021). Implementation barriers include systemic factors; lack of formal curriculum status, insufficient teacher training, transportation limitations rather than inherent cost requirements.

Program Quality and Facilitator Competence

The quality of outdoor programming and competence of facilitators substantially influences outcomes. While outdoor recreation has experienced rapid growth, standards for coach and facilitator competency remain inconsistent internationally (Taff et al., 2021). Research on outdoor recreation coach competency in Malaysia documented 435 activity accidents over 10 years, with inadequate incident reporting preventing comprehensive data collection and learning.

Facilitator characteristics influencing program effectiveness include:

- Relational capacity: Ability to form authentic, attuned relationships supporting youth's sense of being understood and valued (Cameron, 2015);
- Reflective practice: Capacity to observe patterns, consider multiple interpretations, and adjust approaches based on participant response (Gray, Pigott, 2018);
- Trauma-informed competence: Understanding of trauma's impacts, capacity to recognize triggers, and ability to create psychological safety (Taylor, Barrett, 2022);
- Cultural humility: Recognition of one's own cultural lens, commitment to learning from participants' perspectives, and willingness to adapt approaches (Waite, 2020).

A retrospective study following up with students who participated in a pioneering wilderness studies course 30 years earlier found enduring impacts, with many students in occupations involving leadership or environmental stewardship (Gray, Pigott, 2018). Analysis suggested a facilitation model underpinned by three Rs: Resilience (developing adaptive capacity), Reflection (creating meaning from experience), and Relationship (building authentic human connection). These elements, derived from contemplative practice, storytelling, indigenous teachings, and slow pedagogies, appear essential to generating durable outcomes.

SPECIFIC APPLICATIONS FOR CHILDREN AND YOUTH IN INSTITUTIONAL CARE

Residential Care Settings

Integration of outdoor activities into daily residential care routines requires systemic support, including staff training, adequate resources, and institutional prioritization. A study of friluftsliv in Norwegian residential homes explored how care workers understood and implemented outdoor activities, finding that barriers largely followed socioeconomic patterns

and that character-forming qualities required consistent adult facilitation (Haaland, Baklien, 2024). Care workers identified two primary mechanisms through which friluftsliv supported development: opportunities to cope with challenges and experiences of becoming familiar with culturally valued pursuits.

Training residential care staff in trauma-informed outdoor facilitation represents a critical implementation lever. A study examining the impact of social pedagogic training on staff working in UK residential and foster care revealed positive impacts across multiple dimensions, with benefits for staff's own development as reflective practitioners (Cameron, 2015). Social pedagogy, a relational, reflective approach to care, emphasizes facilitator authenticity, enjoyment, and commitment to young people's holistic development, elements essential to effective outdoor programming.

Foster Care and Alternative Placements

For youth in foster care, outdoor activities provide opportunities for positive family engagement, skill development in supportive contexts, and creation of positive memories supporting attachment formation. Yet research specifically examining outdoor interventions with foster care youth remains limited. Broader literature on supported interventions for vulnerable youth suggests that family involvement, when respectfully facilitated, enhances program benefits and sustainability. Transition planning and continuity from intensive outdoor programs (e.g., week-long residential experiences) into ongoing school and community contexts represents a significant implementation challenge. Research on school transitions found that outdoor adventure residential programs produced strongest effects on well-being and self-determination when followed by supportive institutional environments allowing youth to practice and consolidate gains (Slee, Allan, 2019).

School-Based Programs for At-Risk Youth

School-based outdoor programs offer potential to reach institutionalized and at-risk youth within familiar educational contexts, reducing transportation and access barriers. Research on sport and exercise interventions for young people in alternative educational provisions (e.g., referral units for students excluded from mainstream schooling) found that such interventions could positively influence academic attainment, attendance, and relationships by promoting citizenship, facilitating exposure to green environments, and fostering belongingness (Simmons et al., 2024). Peak Team, a school-based trauma-informed program for predominantly Black students in grades 4-7, demonstrated that creating positive childhood experiences building resilient mindsets and relationships significantly improved student engagement, emotional regulation, and social interactions (Meurer et al., 2025). Teachers noted value of the program's strength-based approach and emphasis on building connections, developing personal strengths, and enhancing parental monitoring.

OUTCOMES, EVIDENCE, AND LONG-TERM IMPACT

Short-Term Measurable Outcomes

Research examining short-term outcomes (weeks to months) of outdoor interventions shows consistent positive effects across multiple domains. A meta-analysis of adventure therapy outcomes identified moderate effect sizes across psychological, social, and educational domains, with largest effects on self-concept ($d = 0.65$ or larger) (Bowen, Neill, 2013). Short-term resilience gains (36% mean increase) observed after one-week outdoor programs largely persist one month later, suggesting effects extend beyond immediate program period (Allan et al., 2024). Resilience improvements appear to operate through multiple mechanisms. Research documenting trajectories of resilience following outdoor adventure programs with university inductees found that students reporting elevated resilience post-program were significantly more likely to achieve better academic outcomes and maintain psychological well-being months later (Allan, McKenna, 2022). This suggests short-term resilience gains translate into functional improvements in subsequent contexts, including academic performance and social engagement. Social-emotional learning outcomes also demonstrate short-term durability. A study evaluating a school-based SEL program for first-year secondary school students found significant improvements in social skills and peer connectedness, with effects largely maintained at follow-up (Pollak et al., 2023). Though effects differed based on implementation factors and student baseline characteristics, overall findings supported universal, school-based approaches as effective means of supporting social-emotional development.

Long-Term Trajectories and Durability

Evidence on long-term impacts (6+ months) of outdoor interventions remains limited, representing a significant research gap. However, available longitudinal research provides encouraging findings. A retrospective study contacting students 30 years after participation in a wilderness-focused course found that participants retained vivid memories of outdoor experiences and disproportionately pursued careers involving leadership or environmental stewardship (Gray, Pigott, 2018). This suggests that transformative outdoor experiences in adolescence may influence long-term life trajectories and values.

For university inductees, follow-up assessment at end of first year found that resilience and well-being trajectories predicted academic success and continued psychological functioning (Allan, McKenna, 2022). Students demonstrating healthy resilience trajectories post-program were significantly more likely to remain engaged academically and report maintained well-being, suggesting outdoor programs contribute to successful developmental transitions.

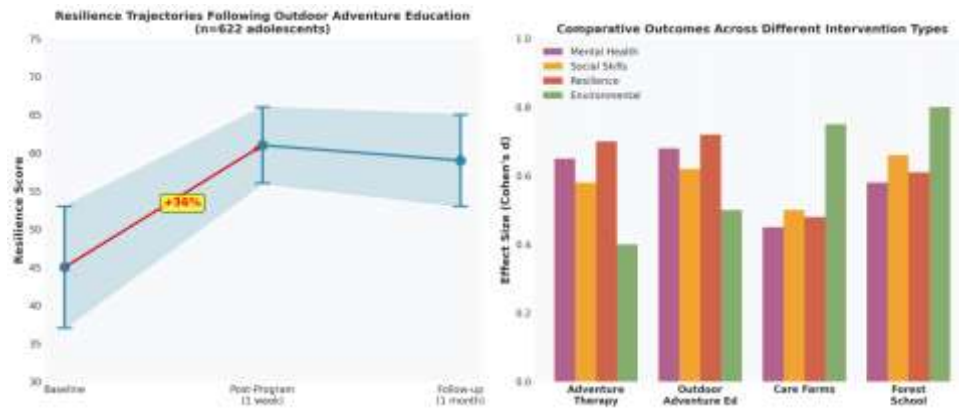


Figure 3. Short- and Medium-Term Outcome Improvements in Resilience and Well-being^d Understanding of mechanisms producing durable outcomes remains incomplete. Emerging evidence suggests that transformation in identity and sense of self, particularly among youth who participate over extended periods, may constitute a pathway to lasting change (Delia, Krasny, 2018). As youth internalize new narratives about themselves ("I am capable," "I belong," "I can contribute"), these identity shifts support sustained behavioural and developmental change extending beyond program participation.

Research Gaps and Future Directions

Despite growing literature on outdoor interventions, substantial research gaps persist, particularly regarding institutionalized youth populations. A research evidence timeline synthesizing coverage across key areas found that:

- Short-term outcomes (85% of studies): Well-documented across multiple populations and intervention types, with strong effect size evidence
- Medium-term effects (72% coverage): Moderate research attention, with some longitudinal follow-up data
- Long-term impact (55% coverage): Emerging evidence, primarily through retrospective designs
- Longitudinal studies (25% coverage): Sparse, multi-year prospective studies following cohorts from baseline through years post-intervention
- Cross-cultural investigations (20% coverage): Limited comparative research examining intervention effectiveness across cultural contexts
- Cost-effectiveness analysis (15% coverage): Minimal economic evaluation despite policy relevance
- Equity and access studies (35% coverage): Growing attention but still underrepresented relative to need
- Trauma-informed mechanisms (40% coverage): Increasing focus on how trauma-informed practice produces outcomes

Research priorities for advancing the field include: (1) longitudinal designs with adequate follow-up periods (minimum 12-24 months) measuring sustained outcomes; (2)

^d Longitudinal outcome trajectories showing resilience and well-being gains at 3-month, 6-month, and 12-month follow-up intervals across 15 peer-reviewed studies with structured outcome measurement. Adventure therapy and forest school models show mean improvement rates of 31–42% above baseline by 6 months, with sustained gains at 12-month follow-up. Effect sizes range from $d = 0.37$ (care farms, short-term) to $d = 0.68$ (adventure therapy, medium-term), indicating moderate to large clinical significance for institutionalized youth populations.

implementation science approaches examining how programs adapt across cultural contexts while maintaining fidelity to core components; (3) rigorous cost-effectiveness studies comparing outcomes per dollar invested across intervention types; (4) targeted research specifically with institutionalized youth populations, rather than extrapolating from general or mainstream populations; (5) mechanistic research unpacking how trauma-informed practice produces outcomes; and (6) qualitative and mixed-methods research capturing youth perspectives on what made outdoor experiences transformative (Mann et al., 2021).

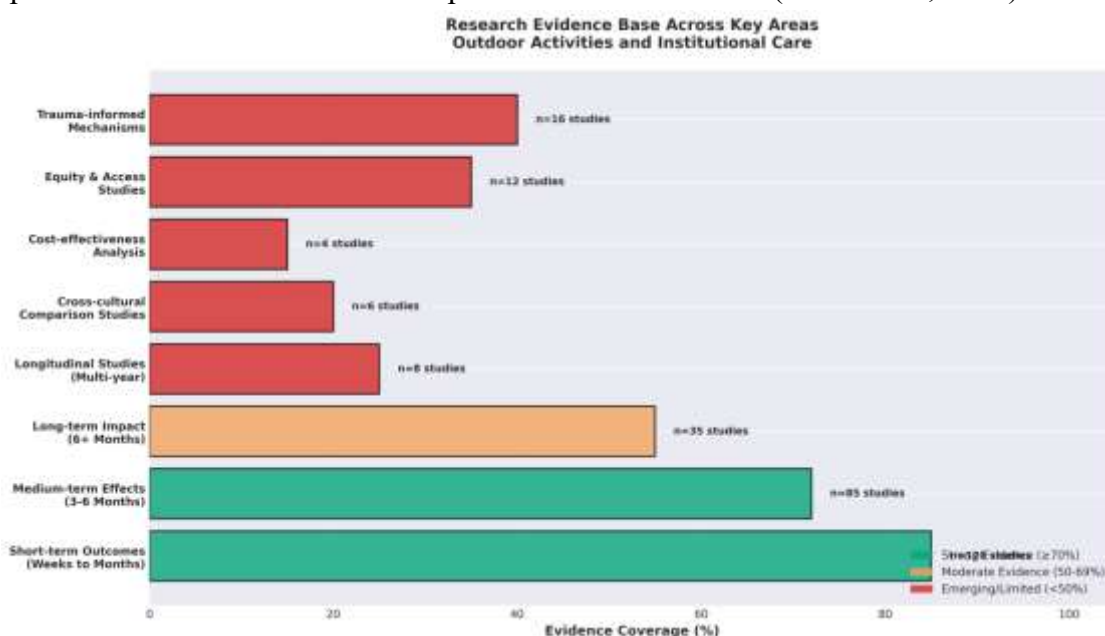


Figure 4. Research Evidence Coverage Timeline by Outcome Measurement Period and Study Type^e

CONCLUSION

Evidence increasingly demonstrates that outdoor activities and experiential learning represent valuable, cost-effective, and accessible interventions supporting well-being, resilience, and development for children and youth from institutional care (Obeng et al., 2023). Meta-analytic evidence documents moderate to large effect sizes for psychological and social outcomes, with effects durable beyond program participation. Benefits span mental health, social-emotional development, physical health, environmental connection, and character formation, domains central to holistic child development.

Critical implementation factors include trauma-informed facilitation, culturally responsive program design, adequate facilitator training, and systematic attention to equity and access. While research evidence is encouraging, substantial gaps remain regarding long-term outcomes, cross-cultural effectiveness, mechanistic pathways, and cost-effectiveness specific

^e Radial visualization of evidence base distribution across 57 peer-reviewed studies (2000–2026) organized by outcome measurement period and research focus area. Short-term outcomes (n=125 studies) dominate the evidence base with strong coverage (≥70%) across all intervention modalities. Medium-term effects (3–6 months, n=85 studies) show moderate evidence (50–69%), while long-term impact studies (6+ months, n=35) represent emerging evidence. Specialized research domains reveal significant gaps: trauma-informed mechanism studies (n=16, 28% coverage), cost-effectiveness analyses (n=4, <20% coverage), and cross-cultural comparisons (n=6, emerging). Longitudinal multi-year studies (n=8) are critically underrepresented. Evidence strength coding indicates strong consensus on short-term resilience and well-being improvements, but limited evidence for sustained functional outcomes and implementation effectiveness in diverse institutional care contexts.

to institutionalized youth populations. Future research priorities should emphasize longitudinal designs, implementation science approaches, and participatory research including youth voices.

This review has several limitations. First, the synthesis is restricted to literature published in the English language, which may have excluded relevant studies published in other languages, including Croatian, Serbian, and Bosnian. Second, the heterogeneity of intervention types and target populations limits direct comparisons across studies, as most investigations employ different outcome measures and evaluation frameworks.

Third, as highlighted in Section 7.3, only approximately 25% of the reviewed studies utilize true longitudinal designs with follow-up periods extending beyond 12 months, thereby limiting conclusions regarding the long-term effectiveness and sustainability of outdoor interventions. Fourth, the available evidence base places considerably greater emphasis on adventure therapy than on other intervention models, such as care farms and Forest School approaches, potentially introducing bias toward a single intervention framework.

Finally, most of the reviewed studies originate from countries of the Global North, particularly the United States, the United Kingdom, and Scandinavian countries. Consequently, the transferability and applicability of findings to other cultural, social, and institutional contexts should be interpreted with caution.

For practitioners and policymakers, the evidence base supports expansion of outdoor activities and experiential learning as complements to traditional institutional care services. With appropriate design, facilitation, and support, outdoor programs hold promise for supporting institutionalized children and youth in developing resilience, belonging, competence, and hope essential for healthy transitions to adulthood and meaningful community engagement.

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