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Wholistic Approaches to Co-Create Culturally Relevant Exercise Programs

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Abstract

Background: When working with Indigenous communities to co-create exercise programs, knowledge translation activities are culturally relevant when the work is relational, grounded in genuine collaboration, and honours Indigenous ways of teaching and learning. Knowledge translation can be culturally unsafe if it is uninformed of the historical and systemic harms of colonization. This can often shift the work to focus on addressing deficits and gaps rather than how to work with the community in a relational way. Culturally relevant knowledge translation work allows for collective understanding which ensures relevance. **Purpose:** This narrative review was conducted to explore culturally relevant exercise programs designed to improve the wholistic health and wellbeing of Indigenous communities. **Methods:** Using relational approaches under Indigenous advisement, we conducted a literature review and applied a Two-Eyed Seeing lens to analyze thematically culturally relevant knowledge translation methods used in physical activity research with Indigenous communities. **Results:** From the nine research studies that were selected, we identified four key themes that aligned with our growing understanding of culturally relevant knowledge translation: Co-creation activities, knowledge Sharing Circles, strengths-based education practices, and culturally safe applications. Examples of these knowledge translation activities are seen to be interwoven into the design of community-based and Indigenous-led exercise programs, which are deeply rooted in the process of relationship-building. **Conclusion:** There is a fluid connection between culturally relevant exercise programs and knowledge sharing methods that are grounded in the Indigenous ways of teaching and learning, highlighting the importance of honouring the community's aspirations, wisdoms, values, and gifts during program co-creation design.

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Keywords: Indigenous, Community, Relationality, Physical Activity, Kinesiology, Sharing Circles, Two-Eyed Seeing, Strengths-based, Wholistic

Land Acknowledgement and Positionality Statement

We are honoured to be learning and sharing knowledge in a meaningful way on the traditional, ancestral, and unceded lands of the hənq̓əminəm speaking xʷməθkʷəy̓əm (Musqueam) peoples. We recognize the land as a teacher – not just as

a setting for the activities but as a participant in health and wellbeing practices. As part of the process to deepen our educational connection between land-based activities and cultural safety, we address our positionality as settler-students engaged in work that emphasizes relationality with the land. To engage in

these processes with respect and humility (Kovach, 2009), we honour the guidance and wisdom provided by Elder Dr. Rosalin Miles as well as Dr. Darren Warburton throughout the entirety of this project.

Introduction

In physical activity research, knowledge translation (KT) is an important part of the process involving communicating the health-related benefits of movement in ways that safely inform the general public (Warburton & Bredin, 2019). The Canadian Institutes of Health Research (CIHR, 2014) define KT as “a dynamic and iterative process that includes synthesis, dissemination, exchange, and ethically sound application of knowledge to improve the health of Canadians” (para. 1). In research with Indigenous communities, Western KT can be culturally unsafe (e.g., imposing Western health interventions without community consultation) especially when the people doing the work do not have a deep understanding of the historical and systemic harms of colonization (Jimmy et al., 2019). When KT is uninformed of history, it can become rooted in deficits-based thinking (e.g., finding the gap, solving the problem) rather than the act of being relational, and can attach the deficits/ problems for Indigenous peoples to address alone rather than focusing on how Indigenous and non-Indigenous peoples can work together to affect change. The need for this level of genuine collaboration is articulated in the Truth and Reconciliation Commission of Canada’s (2015) report of the 94 Calls to Action (specifically #53, #83, and #85).

Culturally relevant physical activity initiatives respect tradition and community engagement (Miles et al., 2023a). As such, KT work in physical activity programs should focus on the

strengths of relationship-building (note: only the community can define cultural safety). An example of culturally relevant engagement is co-creation, which involves the collaborative generation of knowledge (Halvorsrud et al., 2021). In KT, co-creation activities allow for collective understanding which ensures relevance (Archibald & Parent, 2019). Relevance grounds methodologies in the values, histories, and priorities of Indigenous communities (Kirkness & Barnhardt, 1991). For instance, Indigenous peoples view health from a wholistic perspective that values the interconnectedness of the spiritual, mental, emotional, and physical realms of health and wellbeing (Lavallée, 2008). Acknowledging Indigenous worldviews in this context is true co-creation and can help to regulate the quality and relevance of knowledge that is communicated.

However, KT research in this field is still extremely limited and dated (Pelletier et al., 2017). Therefore, the purpose of this narrative literature review is to identify culturally relevant exercise programs designed to improve the wholistic health and wellbeing of Indigenous communities. Specifically, Two-Eyed Seeing (a practice that draws on the strengths of both Indigenous and Western worldviews simultaneously; Iwama et al., 2009) will be used to explore key themes from examples of KT. We hypothesize that culturally relevant KT methods are grounded in genuine collaboration (Ahmed et al., 2021) and honour Indigenous ways of teaching and learning (Wright et al., 2023).

Methods

Search Strategy: From Conversations to Self-Discovery

We conducted a literature search using the electronic database PubMed. The

search applied Boolean operators (AND, OR) and combined the following keywords related to Indigenous knowledge and wholistic wellbeing: “Indigenous,” “Indigenous traditions,” “Sharing Circles,” “health,” “strength,” “community-based,” “co-creation,” “physical activity,” and “land-based.”

Keywords were selected through ongoing conversations in an Indigenous-specific cultural safety seminar course taught at the University of British Columbia (see Acknowledgements). Indigenous experts in this field (RM and DW) facilitated seven in-person conversations (4-6 students per discussion group) in a problem-based learning format that empowered learning through self-discovery (Barrows, 1996). These conversations focused on historical and contemporary events related to Indigenous movement, physical activity, and sport. Topics included:

- Supporting health and wellness in Indigenous peoples
- Waneek Horn-Miller and the Warrior Spirit
- Female athletes living with hyperandrogenism in the Olympics
- The decathlon and the inspiration of Jim Thorpe
- Training for elite hockey success and the inspiration of Indigenous hockey players
- Distance running and the inspiration of Tom Longboat
- Youth athletes living with type 1 diabetes

Furthermore, as part of the process of learning through self-discovery, these discussions were supplemented by completing various KT projects including the co-creation, presentation, and peer

evaluation of evidence-based infographic summaries and video vignettes related to the seminar topics. Learning about the remarkable legacies of Indigenous athletes such as Horn-Miller (2021), and applying our growing understanding of cultural safety in various KT projects as part of these seminar discussions influenced the selection of our keywords. These keywords were selected on the premise that they would yield culturally safe articles.

Inclusion Criteria and Critical Appraisal

We included articles that were peer-reviewed, published in the English language within the past two decades (since 2005), and in consideration of culturally relevant land-based physical activity programs in Indigenous communities (globally). Articles that were not peer-reviewed, published in the English language within the past two decades, or in consideration of Indigenous cultural relevance were excluded. Quality of the articles was assessed for community-based, Indigenous-led (via community partnership), land-based, and knowledge-sharing activities.

Thematic Analysis

We adapted methods of thematic analysis from examples of culturally relevant co-creation work (Lai et al., 2019). Articles that met the inclusion criteria were compiled and reviewed independently by each author. Each study was reviewed meticulously to identify examples of KT. Results were compiled into a table, evaluated in a team setting using a Two-Eyed Seeing lens, and summarized in figures to illustrate culturally relevant KT in physical activity research with Indigenous communities. Discrepancies in how ideas and concepts were grouped into themes were resolved through discussion

within the research team. Themes were established when all members of the research team have made a meaningful contribution and agreed with all majority decisions. Conversations with Indigenous mentors provided external validation.

Ethical Considerations: Indigenous Engagement and Advisement on Relational Methods

The importance of a section in this paper dedicated to sharing the process of Indigenous engagement cannot be understated. Throughout this process, our intentions were to create reciprocal connections with Indigenous mentors, and to rely on their intrinsic expertise to guide a project in a direction that would respect and honour the act of reconciliation. As defined by the Truth and Reconciliation Commission of Canada (2015), “reconciliation is about establishing and maintaining a mutually respectful relationship between Aboriginal and non-Aboriginal peoples in this country. For that to happen, there must be awareness of the past, acknowledgement of the harm that has been inflicted, atonement for the causes, and action to change behaviour.” Our research team was fully committed to engage in meaningful conversations with Indigenous mentors.

We received not only insight from these ongoing conversations, but also invaluable wisdom that added directionality to our project. For instance, TD and SS shared different ideations of physical activity from land-based perspectives, which shaped the focus of this review. The research question, methodology, and interpretations of findings were guided by lessons learned in research by RM and DW (taught in their cultural safety seminars; see Acknowledgements). BB shared expertise to further our knowledge on the impacts of

KT when it is uninformed of history, and offered suggestions on how to see and share our work from the perspectives of reciprocity and relationship building. Additionally, BB and TB provided insight and guidance on ways to articulate our work using relational language.

Throughout this process of Indigenous engagement and advisement, our intentions to build reciprocal connections meant that we were constantly applying the lessons, suggestions, and feedback into our work. From learning about how words matter for Indigenous peoples (e.g., spelling “wholistic” instead of “holistic”; Miles et al., 2023b) to downloading a keyboard layout that allowed us to learn how to type ḥə́nqə́mīnəm characters used in the x̣ʷməθkʷəy̓əm (Musqueam) language (University of British Columbia, 2025), these learning moments led to multiple iterations of this paper. We engaged in these activities under Indigenous advisement with the intention of leading by example to show how non-Indigenous peoples can engage in relational methodologies as an act of reconciliation.

Doing work in this way is one example of how we can honour Indigenous ways of teaching and learning, including teachings of the Four R's (Respect, Relevance, Reciprocity, Responsibility; Kirkness & Barnhardt, 1991) and culturally relevant knowledge-sharing practices as taught in the First Nations Principles of Ownership, Control, Access, and Possession (OCAP®) of research data involving Indigenous communities (First Nations Information Governance Centre, 2018).

Results

Nine studies were included in this narrative review (Table 1), each offering unique perspectives into KT strategies that celebrate Indigenous ways of knowing and

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understanding. Based on our growing understanding of cultural safety, we identified four key themes within the thematic analysis that aligned with our understanding: Sharing Circles, strength-based approaches, culturally-safe applications, and co-creation activities. These four themes are illustrated within the circular visual diagram shown in Figure

1. Specific examples of these themes are listed in their respective quadrants within the circle (in relation to CIHR's definition of KT which is shown on the outer circle, (CIHR, 2014)). An infographic summary of culturally relevant actionable items is illustrated in Figure 2.

Table 1: Thematic analysis results of knowledge sharing activities in peer reviewed journal articles.

Authors	Program	Knowledge Sharing/ Translation Practices
Anand et al. (2007)	Family-based physical activity and dietary practices program	- Community engagement and support within family units - Co-creation: Tailored dietary and physical activity goals to align with traditional practices, knowledges, and preferences
Foulds et al. (2011)	Hearts in Training: Family-based walk/ run program	- Community-centred and Indigenous-led approach - Aligned with Indigenous values of interconnectedness and collective wellbeing while empowering individualized success via self-selected exercise intensity program
Frehlich et al. (2023)	Makoyoh'sokoi (Wolf Trail): Wholistic health and wellness program designed by and for Indigenous Women	- Integrated Sharing Circles and smudging ceremonies for prayer, healing, and connection - Elder and community involvement in all stages of program; community had full autonomy to modify goals
Johnson & Ali (2020)	Circle of Courage® canoeing program: Land-based education and Sharing Circles with Indigenous youth	- Strengths-based Indigenous leadership ensured program was authentic and representative of community aspirations - Meaningful collaboration: Elders/ youth engaged in Sharing Circles/ land-based education (e.g., sweat ceremony, drum making, medicine picking) a year prior to paddling program
Lai et al. (2019)	"With Every Step, We Grow Stronger": Family-based Sharing Circles and walking program	- Two-Eyed Seeing Sharing Circles: Oral storytelling, evidence-based video vignettes, individualized exercise programming - Strengths-based Sharing Circle topics: Co-created with and by community members focusing on wholistic healthy lifestyle behaviours unique to aspirations of the community
Lavallée, (2008)	Oki Chi Taw: Cree family-based Sharing Circle and weaponry practices program	- Medicine Wheel teachings and Elder guided program design, collaboration, and implementation; author's dual role as researcher and participant led the way for co-creation - Anishinaabe symbol-based reflections in Sharing Circles
Lukaszuk et al. (2017)	Ironbark: Community-based fall-prevention exercise and Yarning Circle program	- Yarning Circles (educational storytelling) shared topics related to fall prevention, as well as physical, social, and emotional wellbeing (Indigenous and Western perspectives) - Traditional Indigenous dance moves were integrated into exercise program, supplemented by an exercise manual

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Paul et al. (2024)	Traditional hunting in a community-led observatory study	- Knowledge of traditional hunting grounds kept confidential via agreement with the Chief and research team (OCAP®) - Community-based and Indigenous-led approach; the lead investigator is a member of the Esk'etemc community
Wicklum et al. (2019)	Women Warriors program: Wholistic physical activity program designed by and for Indigenous women	- Western and Indigenous activities (e.g., pilates, POWFit), Sharing Circles, nutrition education tailored to community - Elder-led activities: Medicine Wheel teachings, SMART goal-setting, support for participants outside program

Figure 1: Two-Eyed Seeing perspectives of culturally relevant knowledge sharing methodologies centre around activities that build meaningful and lasting relationships with the community. The center of the circle illustrates the four themes from this review, which came from the authors' qualitative analysis. The four examples within each quadrant are KT activities identified from studies in this review. The outside of the circle represents the authors' interpretations of how the Western KT cycle can be connected to culturally relevant KT. Permission was given by the Indigenous Physical Activity and Cultural Circle to add text and make artistic adaptations to its logo in the creation of this infographic – guided by RM and DW.

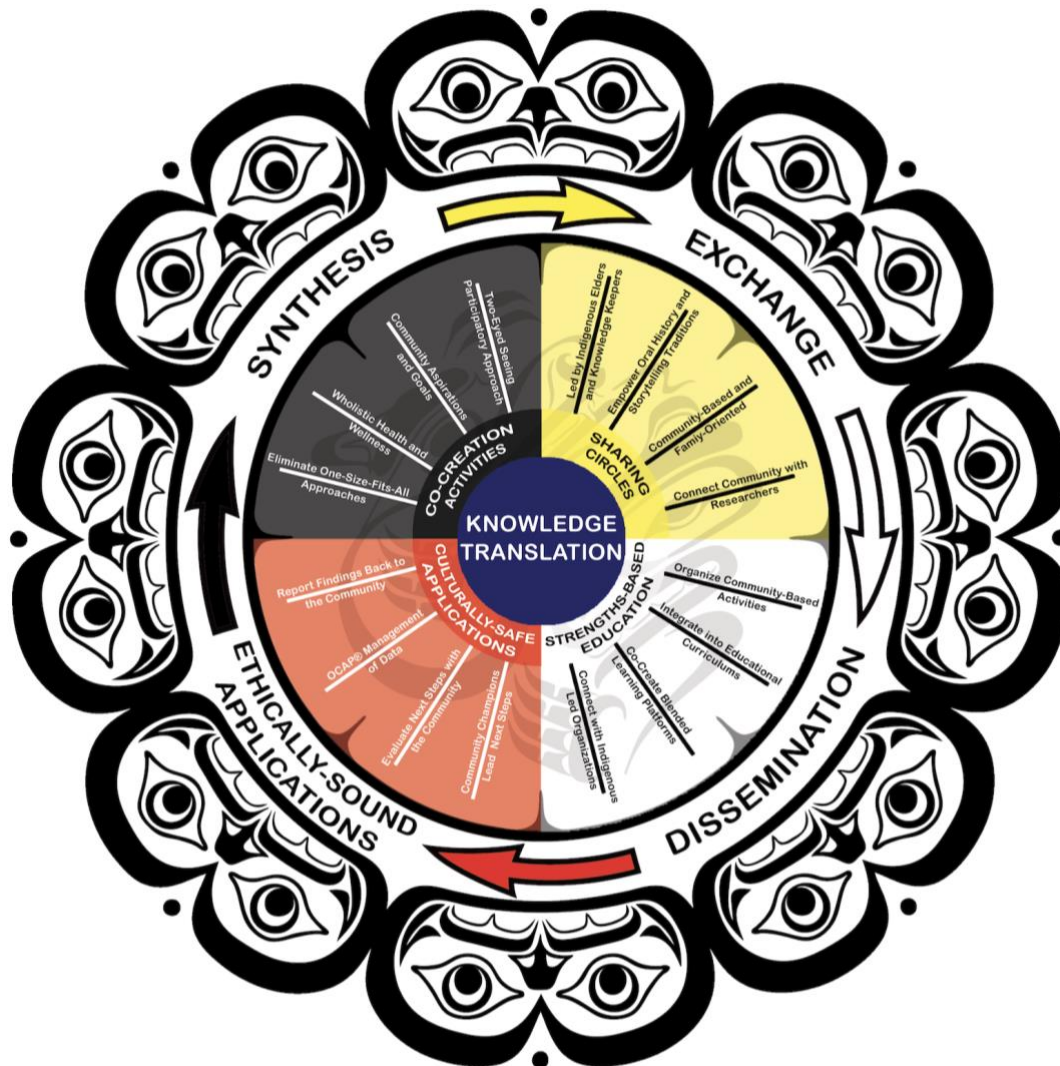
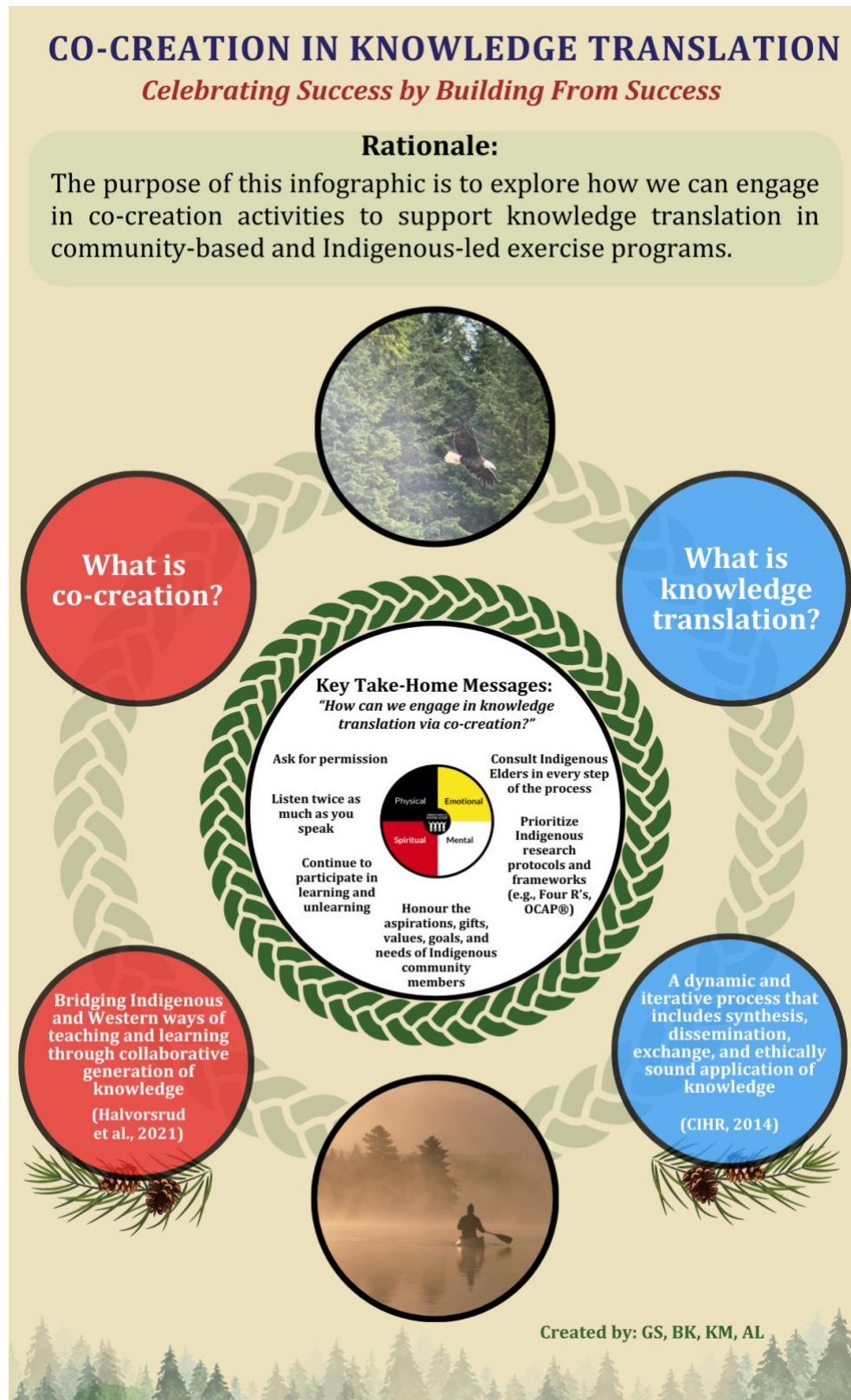


Figure 2: Infographic summary illustrating the authors' interpretation of the "Braiding in Action" metaphor (First Nations Information Governance Centre, 2018) symbolic of the interwoven concepts and actions of KT in co-creation.



Sharing Circles

Sharing Circles create an inherently inclusive space because all stories shared by participants are valued equally in a circle. From Sharing Circles to Yarning Circles (Lukaszyk et al., 2017), these spaces valued individuals with lived/ living experiences and Allies as experts (inclusive of Indigenous and non-Indigenous researchers, healthcare providers, and community members). For instance, the Women Warriors program was open to both Indigenous and non-Indigenous women. At the leadership level, non-Indigenous community members and health professionals were part of the Makoyoh'sokoi Wolf Trail's Advisory Group for consultation (Frehlich et al., 2023). KT activities done in Sharing Circles also empowered the intergenerational sharing of knowledge through oral storytelling and strengths-based education (Johnson & Ali, 2020; Lai et al., 2019).

Strengths-Based Approach

Strengths-based approaches are grounded in recognizing the gifts, aspirations, values, and wisdoms of a community. KT methods that integrated traditional land-based activities — such as hunting (Paul et al., 2024), medicine picking (Johnson & Ali, 2020), and Anishinaabe symbol-based reflection (Lavallée, 2008) — provided strengths-based educational opportunities for participants to connect with their culture.

Culturally Safe Application

Culturally safe applications of KT were highly valued across all articles. These practices honoured OCAP® principles by respecting Indigenous ways of knowing, being, and doing. This included discussions between Band Council members and researchers on how to collect, protect, use,

and share data (Lai et al., 2019), confidentiality agreements to respect a community's request to keep the knowledge of traditional hunting grounds confidential (Paul et al., 2024), and the design of exercise programs that centred around the leadership of Elders in the community (Foulds et al., 2011).

Co-Creation Activities

A recurring theme was the importance of co-creation with Indigenous leaders and community members in the KT process. Co-creation activities are culturally relevant because they honour the community's values, gifts, aspirations, and teachings (Anand et al., 2007). For instance, the Wolf Trail program engaged Elders in the co-design of learning modules for participants and a program facilitator manual in support of different learning styles during exercise classes (Frehlich et al., 2023). Other studies also showed the importance of engaging community members in the co-creation of learning module topics (Lai et al., 2019). In our review, co-creation activities were evident in various educational spaces (e.g., Sharing/ Yarning Circles) and supported the bridging of Indigenous and Western ways of teaching and learning.

Discussion

Culturally Safe Knowledge Sharing - An Interwoven Process

In support of our hypothesis, our findings showed that there was no one-size-fits-all approach. The land-based programming identified in this review centred around building meaningful and lasting relationships with the community, which was evident in the examples of KT activities (Figure 1). This Discussion section will provide additional context to

show how culturally relevant KT is connected to relationship-building.

Taking the time to get to know a community before the research work is an essential step in building rapport. This was evident in the Circle of Courage® paddling study in which connections were made one year prior to the five-day canoe activity (Johnson & Ali, 2020). During the relationship building process, Elders, youth, Indigenous mentors, and the research team connected with each other in traditional activities (e.g., ice fishing, water ceremony, singing) and in Talking Circle discussions to co-create the five-day outing. The process of relationship building has also been described extensively in other exercise programs especially Women Warriors (Wicklum et al., 2019), Ironbark (Lukaszyk et al., 2017), and Wolf Trail (Frehlich et al., 2023).

During this relationship building process, researchers in the Women Warriors program and Ironbark program integrated a Two-Eyed Seeing approach to further connect with the participants' aspirations. This involved integrating traditional activities directly into exercise programs, such as the combination of pilates and POWFit (a mix of different Powwow dances into fitness routines) as seen in Women Warriors (Wicklum et al., 2019). A similar approach was taken in the fall prevention program Ironbark. In fact, a community-based exercise manual was modified by an Indigenous graphic designer to illustrate the integration of traditional dance moves into core leg muscle strengthening and balance workouts. Moreover, Two-Eyed Seeing activities were also evident in Wolf Trail (Frehlich et al., 2023). In 2019, the research team attended a national conference (Indigenous Gender and Wellness: Idea Fair and Learning Circle) to present their

pilot program and learn from stakeholders in Sharing Circle discussions. These KT activities propelled Wolf Trail to further its program development in 2020, including the establishment of an Advisory Group and the promotion of a “community of practice” involving Indigenous and non-Indigenous community members (Wolf Trail, 2025). The impact and success of exercise programs such as Women Warriors, Ironbark, and Wolf Trail have led to their expansion into different communities championed by community leaders (Sutherland, 2021; George Institute for Global Health, 2024; Wolf Trail, 2025). These examples in Figure 1 show how relational work can lead to relevancy in KT.

Additional thematic analysis of Figure 1 showed that the four recurring themes of culturally relevant KT are all connected to each other in some way. Studies by Lai et al. (2019) and Paul et al. (2024) provide insightful examples of these connections. “With Every Step, We Grow Stronger” (Lai et al., 2019) showed that Sharing Circles were central to all KT activities, especially when there was a need to pivot the research. For instance, during a time period when environmental wildfire smoke in Lytton First Nation affected a community-based walking program, ongoing discussions between community leaders and researchers led to the co-creation of new KT video vignettes; these KT resources helped participants modify their individualized workouts in an indoor setting. Furthermore, in a study that evaluated how wild game hunting can increase physical activity (Paul et al., 2024), it can be argued that the respect for OCAP® principles was foundational to the relationship-building aspects of the project. The Esk'etemc community had asked that the data and knowledge involving traditional Esk'etemc hunting

grounds remain confidential to the community, with the exception of the lead investigator who is a member of the Esk'etemc community with close ties to the community, Chief, and Council. Honouring this agreement (and disclosing this conversation in the research paper) respected the community's wishes and facilitated relationship building between community and researchers. These examples show that culturally relevant KT methodologies are not isolated steps in the relationship-building process. Indigenous participant voices and perspectives from other programs such as Ironbark also resonate with these interpretations (Gidgup et al., 2022).

Overall, our observations indicate that culturally relevant KT activities are “dynamic and iterative” processes that are connected to each other from a relationship-building perspective. When the community and researchers engage in these practices meaningfully, it is as if their work is woven together like a braid (Figure 2). In the OCAP® course, this is illustrated by the Braiding in Action metaphor, which is symbolic of the interwoven actions of co-creation and collaboration (First Nations Information Governance Centre, 2018).

The concept of braiding connects back to an important point addressed in the Introduction section of this paper. As noted by Jimmy et al. (2019), “a deep understanding of historical and systemic harms and their snowball effects needs to become common sense” (p. 22) before braiding can even begin. Embracing Two-Eyed Seeing, there is a role for non-Indigenous peoples who are willing to learn about the history and legacy of colonization (Anderson, 2019). Based on our analysis of the literature, asking for permission, listening twice as much as you speak, and being part of the conversation in

Sharing Circles are some examples of how to learn with, from, and about the community (Figure 2). These conversations can also include meaningful engagement in the OCAP® course and San'yas Anti-Racism Indigenous Cultural Safety Training program (Provincial Health Services Authority, 2025). Indigenous and non-Indigenous peoples are needed to do Two-Eyed Seeing work, but the importance of understanding history prior to braiding cannot be understated (“Truth, then reconciliation;” Cervin, 2021, p. 1).

Limitations and Next Steps from Strengths-Based and Relational Perspectives

To model strengths-based approaches, we address this study's limitations from a position of strength. First, despite the limited number of research available and small sample sizes within these programs, we celebrate these studies for their accomplishments because they honour Indigenous perspectives of knowing, doing, and being (Martin & Mirraboopa, 2009), and also address the Truth and Reconciliation Commission's (2015) Calls to Action (particularly #88 and #89 – which emphasize the need for more inclusive and culturally relevant physical activity policies, programs, and initiatives). These strengths-based studies provide hope for future research, as evident in Ironbark's follow-up trial that has currently recruited 21 sites across Australia (George Institute for Global Health, 2024). Second, as this review only utilized PubMed, searching additional electronic databases including gray literature may generate more results. Third, of the articles that were included in this review, many programs still do not involve Indigenous Elders or Spiritual Leaders in the design or evaluation

processes of the program – this is also articulated by Hearod et al. (2019). In recognizing the importance of wholistic wellbeing, we call upon future research to explore culturally relevant outcome measures such as spiritual wellbeing (Salloum & Warburton, 2019) and mental wellbeing (Field et al., 2022).

Another limitation to this study was inherent within the very process of thematic analysis. Although this project was guided by Indigenous experts, *doing* thematic analysis using a Two-Eyed Seeing lens was challenging with limited Indigenous input during the analysis (as disclosed in our Positionality Statement). However, we compensated for this limitation by being relational and seeking insight through all stages of the literature review, including inception and final review of the project. Meaningful steps were taken to ensure that the paper's findings and associated analyses were validated by Indigenous peoples with diverse experience and insight. This includes having conversations and building relationships with Indigenous colleagues and mentors from various organizations including UBC Indigenous Health and Physical Activity Program, Indigenous Physical Activity and Cultural Circle, as well as the Health and Fitness Society of British Columbia. To engage in an ongoing opportunity for learning and reflecting, we invite a secondary paper to evaluate the methodologies, results, and analyses presented in this paper.

Conclusion

The ideas originating from our thematic analysis represent one interpretation of culturally relevant KT in exercise programs within Indigenous communities. Aligning with our hypothesis, exercise programs that engaged in culturally safe KT were

grounded in Indigenous methodologies and genuine collaboration, including co-creation activities held within Sharing Circles, wholistic land-based activities led by Elders, and respect for OCAP® principles. Most notably, culturally safe knowledge-sharing practices fostered meaningful relationships between community and researchers, and in three examples (Women Warriors, Ironbark, Wolf Trail), ongoing collaboration expanded exercise programs into numerous communities in both research and non-research capacities.

These examples are a testament to what it means to celebrate success by building from success. The implications from our findings in this narrative review are consistent with insights from recent systematic reviews (Pelletier et al., 2017; Morton Ninomiya et al., 2022; Ahmed et al., 2021) – that further cultural safety research in this field is not only highly warranted but must also be validated by Indigenous experts. In support of the Truth and Reconciliation Commission of Canada's (2015) 94 Calls to Action, we call upon future researchers and funding agencies to continue supporting Indigenous-led KT projects that give space for new and better understanding consistent with Two-Eyed Seeing.

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We are grateful to receive permission from the Indigenous Physical Activity and Cultural Circle to make artistic adaptations to its logo in the creation of Figure 1. All our relations.

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Authors' Qualifications

The authors' qualifications are as follows: Georgia L. Street, BKin Candidate; Ben W. Kolb, BKin Candidate; Kayla L. Masing, BKin Candidate; Alberta L. Liang, BKin Candidate.

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