



Co-creation and Evaluation of an Adapted Physical Activity Toolkit: Guidelines To Support Practice Among Rehabilitation Professionals in Community Organizations

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RESEARCH

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ABSTRACT

Background: Limited knowledge and skills of health professionals is a common barrier when adapting physical activity for people with disabilities. A community organization (Adaptavie) identified the need for improved training and resources to facilitate APA prescription by their employees. The objectives of this research were to co-create an APA toolkit and evaluate implementation.

Methods: A multi-method participatory research approach was used with kinesiologists who worked at Adaptavie. The project consisted of two phases: P1) co-creation of the toolkit; P2) implementation evaluation. Sociodemographic information (P1; P2), the Work self-efficacy Inventory Survey (P1; P2), the Indicators of Success Questionnaire (P2) and focus groups (P1 n = 3; P2 n = 1) were conducted with kinesiologists. Summary statistics were described (sociodemographic and questionnaires) and analysed thematically (focus groups).

Results: The co-creation of an evidence-based training toolkit contained information about 45 types of disabilities. Five to eight kinesiologists (depending on the phase) reported improvements in workplace self-efficacy, skills and knowledge after using the APA toolkit for one year. Following implementation, the APA toolkit was reported to have a high level of usability and fidelity.

Conclusion: A co-created APA toolkit supported kinesiologists to prescribe evidence-based APA programs by increasing their knowledge, skills and self-efficacy.

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INTRODUCTION

Physical activity (PA) is key to maintaining physical and psychological health and should be prescribed (Thornton et al., 2016). The physical, psychological and social benefits of PA include decreased risks of chronic diseases, depression, anxiety, and social isolation (Fernhall, Heffernan, Jae, & Hedrick, 2008; Lui & Hui, 2009). For the 1.3 billion people who live with disabilities (Martin Ginis et al., 2021), the benefits of PA are amplified, as people with disabilities experience higher risk of secondary health conditions and negative psychosocial impacts (Anderson & Heyne, 2010). Despite the benefits, people with disabilities are generally not active enough to accrue the health benefits of PA (Lui & Hui, 2009). For example, in Canada, approximately 37% of people with spinal cord injury do not meet the PA guidelines and 50% report that they do not participate in any PA at all (Rocchi et al., 2017).

It has been suggested that PA should be prescribed as part of primary health care as a cost-effective approach for increasing PA (Thornton et al., 2016). However, prescription of PA for people with disabilities must consider individual needs, capacities, and indications to ensure suitable PA prescription. For example, personal limitations (e.g., pain, lack of energy, self-consciousness about exercising in public) and environmental obstacles (e.g., inaccessible public transportation, lack of accessible exercise equipment, social exclusion, undertrained and under resourced health staff), have been reported to influence sedentary behavior among people with disabilities (Krueger, 2000; J. Rimmer & Marques, 2012; J. A. Rimmer & Rowland, 2008). Adapted PA (APA) refers to all physical and sports activities that are adapted and customized to an individual's functional movement, limitations, contraindications to exercises and environment to facilitate participation in the activity (Barbin, 2015). In this way, adapting PA can facilitate participation by people with various disabilities or chronic diseases (Barbin, 2015). Moreover, APA is commonly used as a rehabilitation approach by healthcare professionals for prevention of secondary conditions, re-education, community reintegration, educational and social participation (Barbin, 2015).

Despite the importance of APA, there are limited community-based opportunities that meet the needs of people with disabilities (Krueger, 2000). Moreover, healthcare professionals who provide APA services in the community (e.g., kinesiologists, recreation therapists, gym staff) commonly do not receive adequate APA training to ensure safe and effective prescription (Krueger, 2000; J. Rimmer & Marques, 2012; J. A. Rimmer & Rowland, 2008). For example, university curriculum in kinesiology often focusses on exercise prescription for healthy populations and chronic illnesses, but does not address specific considerations and individualized approaches for various types of disability (Solmon et al., 2020). Furthermore, continuing education opportunities in APA are limited upon completion of entry-level programs (Solmon et al., 2020). As a result, people with disabilities may not receive optimal community-based APA services that best meet their needs (World Health Organization, 2020).

Improving APA services has been identified as a rehabilitation need (World Health Organization, 2011, 2021). Specific to Quebec, Canada, a community-based PA organization (Adaptavie) identified a need to improve APA knowledge and skills of their staff to improve their services for approximately 2000 people with disabilities (Adaptavie, 2019). One aspect of the job of Adaptavie staff (i.e., kinesiologists) includes the provision of customized APA programs for a clientele with diverse disabilities. Adequate knowledge and skills may enhance APA prescription and workplace self-efficacy among kinesiologists (Garcia, 2015). Enhanced self-efficacy may also improve employee engagement, commitment and performance and job satisfaction (Bandura, 1997; Cohen, 1988; Kruglanski, 2011). However, kinesiologists at Adaptavie expressed having a lack of knowledge, skills and self-efficacy to develop APA programs for people with disabilities.

In response to the identified needs, the purpose of this study was to co-create and evaluate an APA toolkit to increase the knowledge, skills and self-efficacy of Adaptavie staff. The primary objective was to co-create an APA toolkit with kinesiologists who work at Adaptavie. The secondary objectives were to implement the toolkit and explore kinesiologists' knowledge, perceptions, and self-efficacy before and after using the APA toolkit.

METHOD

DESIGN

In response to the identified need to improve knowledge and skills for providing APA, a participatory research approach was used to enhance partner engagement throughout co-

creation and implementation of an APA toolkit (Baum, MacDougall, & Smith, 2006). In this way, kinesiologists at Adaptavie shared their needs, reflected on workplace barriers, and identified needs that were not being addressed by existing knowledge and resources (Kidd & Kral, 2005). Kinesiologists were actively involved in each step of the research, from conceptualization and protocol development, data collection and analysis, co-constructing, implementation, and evaluation of the toolkit (Baum et al., 2006; Kidd & Kral, 2005).

A two-phase (co-creation, implementation) multi methods study was conducted. The co-creation phase followed an iterative process (one focus group, literature review, two additional focus groups) where researchers and kinesiologists discussed the specific needs of Kinesiologists, the preferred courses of action, and the development of the toolkit to ensure would respond to APA practice needs (Kidd & Kral, 2005). The implementation evaluation included collection of quantitative questionnaires, a training session on how to use the toolkit, and focus groups. Ethical approval was obtained from a local Research Ethics Board.

PARTICIPANTS AND RECRUITMENT

After agreeing on the research approach, a kinesiologist in a coordinator role at Adaptavie was contacted by email by AdSL to share the study details with all kinesiologists at Adaptavie. A purposive sample of kinesiologists was recruited on a voluntary basis from a maximum of approximately 20 kinesiologists. Participants were eligible to be included in the study if they prescribed APA at Adaptavie. There were no additional inclusion or exclusion criteria.

DATA COLLECTION

Phase 1: Co-creation of the APA toolkit (as described in Figure 1)

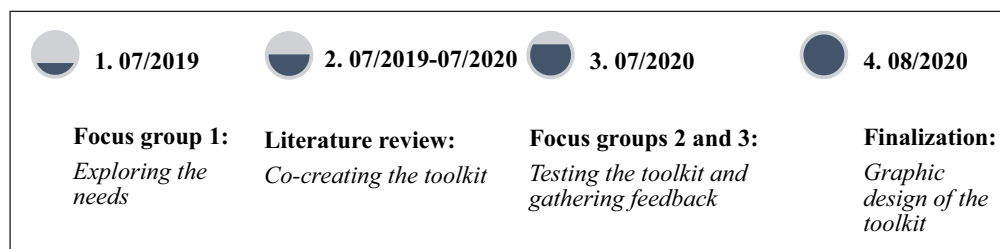


Figure 1 Timeline of focus groups and literature review conducted in Phase 1.

1. In July 2019, kinesiologists participated in a semi-structured focus group (focus group 1) during which they shared their needs in the workplace. At the beginning of the focus group, all participants completed a sociodemographic questionnaire (i.e., age, sex, education, current employment, and professional training) and the validated Work Self-Efficacy Inventory Survey (WS-Ei) (Garcia, 2015; Raelin, 2015). Participants rated their level of self-efficacy about 30 items in the workplace (i.e., learning, problem solving, pressure, role expectations, teamwork, sensitivity, and work politics) using a 5-point Likert scale from 0 (not at all confident in their abilities) to 5 (completely confident in their abilities) (Garcia, 2015). Participants were asked to respond to each item imagining a setting where they are beginning an intervention with a client (Garcia, 2015). The WS-Ei uses the term confidence in place of self-efficacy, as it is generally more understood. A composite score of work self-efficacy was calculated by summing 30 items, with scores ranging from 30 to 150 (Garcia, 2015).
Participants were then asked about the resources available, specific resources available when faced with challenges, amount of (and satisfaction with) continuing education or training related to disabilities or APA (in or out of the workplace), level of self-efficacy when developing and prescribing an APA program, perceptions of how self-efficacy varies over time and why, expectations of the study, and expectations of the APA toolkit (e.g., format, disability types, content). Following the focus group, participants sent an email to the researcher stating which disability types should be included in the toolkit, according to disability types encountered most frequently at work and disability types they perceive the lowest self-efficacy for prescribing APA.
2. A narrative literature review on APA prescription was conducted by AdSL between July 2019 to July 2020 (Grant & Booth, 2009) following five distinct steps: 1) create the

search strategy; 2) search online databases; 3) article selection; 4) data extraction; and 5) synthesis of the results (Arksey, Arksey, & O'Malley, 2005). The search was conducted between July 20 to August 5, 2020, using two electronic health databases (Medline, CINAHL) (Batbaatar, Dorjdagva, Luvsannyam, & Amenta, 2015). The search strategy included terms for 'adapted physical activity', 'rehabilitation' and various disabilities (e.g., spinal cord injury, multiple sclerosis suggested by the kinesiologists to be included in the toolkit). The full search strategy is included as a supplementary file. Abstracts and full-text articles were screened according to the following inclusion criteria written in French or English, original results or reviews of literature published after 2000, included adult populations (i.e. 18 years old or older), available in full text and included content relevant to APA. As requested by the kinesiologists, articles were considered relevant if they focused on specific diagnoses (i.e., specific characteristics, symptoms or contraindications), or recommended APAs, counseling tips or adaptive materials. Information from grey literature (i.e. websites written by health specialists) with the same inclusion criteria were also considered for inclusion to complete missing information. Duplicate titles and abstracts were removed.

Articles were read in full and reviewed for relevance. Information regarding specific diagnoses (i.e., specific characteristics, symptoms or contraindications), recommendations for APA, PA counseling tips or adaptive materials were extracted and summarized. Information was organized according to diagnosis, such that each diagnosis included a brief description of common characteristics, indications and contraindications for PA prescription, and suggested activities.

Throughout this process, all participants and members of the research team read the toolkit and provided iterative feedback to ensure quality of the information and that the toolkit would meet the needs. Approximately every three-months the content of the toolkit was validated by members of the research team [KB, CSB]. Similarly, the Adaptavie coordinator [RPL] collated feedback from all kinesiologists to provide iterative feedback on the content and structure of the toolkit during next focus groups.

3. In July 2020, kinesiologists participated in two virtual semi-structured focus groups (focus group 2 and 3) with the objective of presenting the APA toolkit and sharing first impressions (focus group 2), as well as obtaining feedback (focus group 3). An electronic version of the toolkit was sent to kinesiologists prior to focus group 2. During the focus group, a summary of the study progress was provided, and the most recent version of the APA toolkit was presented. All questions were answered, and first impressions or comments were shared.

Focus group 3 was held two weeks later and consisted of answering the kinesiologists' questions and collecting feedback on the toolkit. Semi-structured questions were asked about the content of the toolkit (e.g., disability types, details on each disability type, perceived accuracy of information, quantity, and quality of information) and structure (e.g., esthetic, organization and visual cues). Feedback from kinesiologists who were not able to attend the focus group were obtained before the meeting by the Adaptavie coordinator [RPL] and discussed during the focus group.

4. In August 2020, the APA toolkit was modified according to suggested improvements reported by the kinesiologists and a final version was printed.

Phase 2 : Implementation evaluation of the APA toolkit (as described in Figure 2)

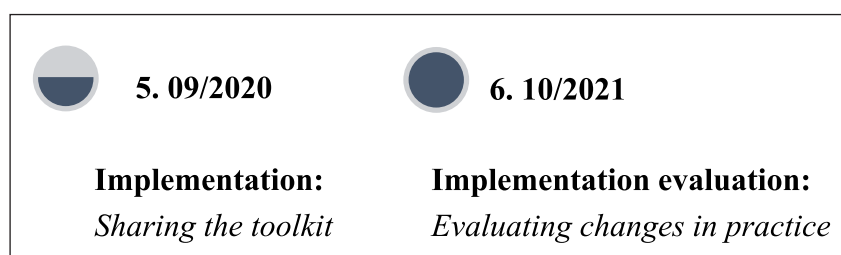


Figure 2 Timeline of implementation and evaluation conducted in Phase 2.

5. In September 2020, the toolkit was shared by email with all employees of Adaptavie.
6. The implementation evaluation was conducted in October 2021. Kinesiologists participated in a semi-structured focus group (focus group 4) and were asked questions

about perceived differences in practice since the implementation of the toolkit. Participants were reminded of the study objectives and completed the two questionnaires that were administrated in Phase 1 (i.e., sociodemographic questionnaire and WS-Ei). The WS-Ei assessed retention and generalization of learning, as well as the evolution of kinesio logists' self-efficacy in the workplace since receiving the APA toolkit. The validated Indicators of Success Questionnaire, adapted from the System Usability Scale (Réseau international sur le Processus de production du handicap), was also administered to assess usability (i.e., ease of use, intention to use) and fidelity (i.e., inclusion of clear and recent evidence-based information in sufficient quantity and quality with appropriate vocabulary for health professionals) of the toolkit (Brooke, 1996; Pinem et al., 2020). Level of agreement with ten short statements were evaluated on a 5-point Likert scale from 1 (do not at all agree) to 5 (completely agree) (Brooke, 1996; Pinem et al., 2020) and usability was graded on a scale ranging from A (excellent; >80.3) to E (poor; <51) (Brooke, 1996).

During the focus group, participants were asked about their knowledge and level of self-efficacy for prescribing APA programs, and any perceived changes over the past year. Satisfaction regarding format, accessibility, esthetics, and quality of the toolkit were explored, and suggestions for improvement were welcomed. Participants were also asked to discuss how the toolkit responded to their needs and the implementation process.

DATA ANALYSIS

Sociodemographic data, WS-Ei and Indicators of Success Questionnaire scores were summarized (mean, SD) and change in WS-Ei scores from Phase 1 to Phase 2 were evaluated using the Mann Whitney U test ($\alpha = 0.05$). Focus groups 1 and 4 were transcribed verbatim and coded line-by-line in the original language (French) using Nvivo. Codes were validated by three members of the research team [AdSL, KB, CB] and an inductive thematic analysis was conducted. The discussion points from focus groups 2 and 3 were narratively summarized by [AdSL, RPL] and used to revise to the toolkit. Themes and quotes were translated to English.

RESULTS

PHASE 1: CO-CREATION OF THE APA TOOLKIT

Seven kinesio logists in Phase 1 were 31 ± 3 years of age, female ($n = 6$) and full-time kinesio logists at Adaptavie ($n = 6$). Four were employed at Adaptavie for 2–4 years, and the others for 5 years or more. All participants obtained Bachelor of Science in kinesiology, two of whom pursued graduate studies in kinesiology. One participant had a certificate in APA, and six did not have any formal training specific to disability.

Focus group 1

The duration of the focus group was three hours. Three inter-related themes emerged, including: 1) "Training and Resources", which revealed training that kinesio logists received in relation to APA and the resources they have access to in their current workplace; 2) "In the Adaptavie Field", which described kinesio logists' clientele and level of work self-efficacy; and 3) "Needs and Expectations for the Toolkit", which explained the desired design and content of the APA toolkit.

Theme 1: "Training and Resources"

In relation to training previously received, some participants mentioned receiving a short training session from Adaptavie on adapted physical literacy. Although, it was unanimously repeated that, *"We have not received specific courses on functional limitations during our university curriculum and no training or conferences have been accessible or specific enough to help. They all focus on leisure and super general guidelines instead of specific adapted physical activities regarding different clientele."* [participant 3] As a result, when in doubt, they rely on more accessible and informal resources, which commonly include internet searches or conversations with experienced colleagues of specific clientele from the rehabilitation center where Adaptavie is located. One participant expressed, *"Currently, there are no physical and*

evidence-based resources such as a toolkit, except that now we have access to the Internet, which makes things easier.” [participant 5] However, participants questioned the fidelity and validity of information from the internet, and the sustainability of informal conversations with practitioners from the rehabilitation centre. Moreover, conversation with expert colleagues are usually limited to the daytime hours, and frequent staff changes at Adaptavie and the rehabilitation centre make it difficult to acquire the relevant information when needed. As one participant reflected, *“This collaborative support remains sporadic.”* [participant 7] Therefore, participants felt the lack of formal training and limited resources left them with little evidence-based knowledge on disabilities and appropriate tools for prescribing APA.

Theme 2: “In the Adaptavie Field”

All participants mentioned working with a very broad and diverse clientele throughout the year with respect to age and disability type. Indeed, one participant expressed, *“We don’t have just one type of client like some practitioners in the rehabilitation centre. Here, we have them all, so we don’t specialize in every case. We do not have the time or resources to gather information on each of our clients’ diagnosis and contraindications.”* [participant 3] Another participant emphasized that *“We cannot be specialists in everything.”* [participant 4] Given they have very little evidence-based knowledge on functional limitations, kinesiologists expressed feeling under prepared and lacking self-efficacy to develop and prescribe individualized APA programs for their clients.

All participants mentioned having to learn on the job through trial and error. For example, one participant explained, *“I have learned more by working directly at Adaptavie. We make arrangements and learn as we go along.”* [participant 6] However, one participant added that it was not an easy thing to do and that most clients’ trust and level of engagement depend on kinesiologists’ expertise, *“There are some people that the trial-and-error will work with, that you can say ‘we’ll try that, and if it doesn’t work we’ll move on to something else’, but there are others that you will feel like they don’t trust us and the connection won’t be best.”* [participant 2] Other participants added that learning through experience hindered their effectiveness and self-efficacy in responding accurately to unexpected challenges regarding their clients’ recommended exercises, which was agreed upon by all participants. As one person expressed, *“We should have more knowledge about various disabilities to better understand our clients and to be more confident. A toolkit would be useful since it would provide us with valuable information, answer our questions more easily and reassure us that we are on the right path. I personally would have loved to have an evidence-based toolkit when I was hired; it would have given me more confidence.”* [participant 3]

Theme 3: “Needs and Expectations for the Toolkit”

All participants expressed that an APA toolkit that included typical profiles of various disabilities could enhance knowledge, and reinforce problem-solving skills, and improve prescription of APA. Participants expressed a preference to have an individual electronic version of the toolkit and one paper version available at Adaptavie. One participant suggested, *“I think there could be a copy for everybody in the gym, and when people are hired, we could give them a paper copy as well as access to the electronic version.”* [participant 3] Finally, regarding the toolkit’s content, participants expressed the need to have information more condensed than the scientific literature, but more specific than the facts sheets for the population. More specifically, one participant detailed, *“For each major disability, we would like to see a description of the disability; characteristics, symptoms and contraindications; the general recommendations in terms of physical activity prescription; counselling tips... what to say and not to say; recommended adapted equipment; and relevant references to learn more.”* [participant 2]

Literature review

508 full-text articles were screened for inclusion. Data from 144 peer-reviewed articles and 50 sources of grey literature were used to create the APA toolkit. Tables were created for each of the 15 main disability types suggested by participants, including specific characteristics, symptoms and contraindications, recommended APA, counseling tips, suggested adaptive materials and additional references. For 30 other secondary disability types encountered by kinesiologists,

information was summarized about characteristics, symptoms and contraindications. The 151-page toolkit also included a legend and abbreviations, spaces for notes, photos of proposed adaptive materials, and a glossary. An excerpt from the APA toolkit is shown in Figure 3.

Spinal cord injury							
Main characteristics	<ul style="list-style-type: none">- Main causes: accident, violent event, or infection.- Symptoms are directly related to the severity and location of spinal cord injuries.- Three main regions are affected:<ul style="list-style-type: none">• Cervical (C1-C8):<ul style="list-style-type: none">○ Grave, mortal○ Usually affects the arms, legs, center of the body and even the ability to breathe on its own.○ The higher the lesion in the cervical spine, the worse the injury.○ Symptoms may be felt on one or both sides of the body.• Thoracic (T1-T12):<ul style="list-style-type: none">○ Usually affects the legs.○ Chest lesions located in height can affect blood pressure.• Lumbar (L1-L5):<ul style="list-style-type: none">○ Usually, one leg or both lower limbs○ Incontinence						
To monitor	<p>Symptoms: vary between mild and fatal, and whether the lesion is complete or incomplete.</p> <ul style="list-style-type: none">• Sensation of pain, burning or numbness• Incontinence• Breathing difficulties• Muscle spasms• Decreased muscle strength• Modification of reflexes• Loss (partial or complete) of muscle control or sensations (temporary or permanent):<ul style="list-style-type: none">○ Limb mobility and locomotion○ Feeling pressure and temperatures• Difficulties in body temperature regulation: Below the level of the individual's injury, sweating can be inhibited.• Spasticity: can be a sign of pain and be made worse by medical problems, such as skin breakdown or infection. Warming up and stretching can help relieve spasticity• Osteoporosis in paralyzed limbs: favor exercises with less impact to avoid fractures• Changes in blood pressure:<ul style="list-style-type: none">○ Autonomic dysreflexia:<ul style="list-style-type: none">▪ Signs: severe headache, anxiety, profuse sweating, hot flashes above the level of the injury, blurred vision.▪ How to react: keep the person seated and avoid tight clothing. If symptoms persist for more than five minutes, seek medical assistance.○ Orthostatic hypotension:						
General recommendations for prescribing APA	<ul style="list-style-type: none">• Signs: dizziness, nausea, fatigue.• How to react: Lay the client down (feet raised and pressure on the abdomen) until the symptoms disappear.• People with quadriplegia are generally more at risk than people with paraplegia. <p>Risks of:</p> <ul style="list-style-type: none">• Overuse of shoulders and wrists: when prescribing APA, remember the importance of the upper body in ADLs and favor progressive exercises.• Pressure ulcers: encourage a change in position every 10-15 minutes. <table><tr><td>Aerobic</td><td>20 min/session; 2x/week Moderate to vigorous intensity Examples: cycling (with legs or arms), treadmill, walking, swimming, basketball, dancing, other sports...</td></tr><tr><td>Muscular Strength</td><td>2x/week. Choose a resistance heavy enough to the point where the person can barely complete the repetitions of the last set, yet still be safe. 1-2 minutes of rest between each set and exercise are required. Alternate the major muscle groups to be worked. Examples: resistance elastic bands, free weights, cable pulleys, weight machines, yoga, Pilates, Tai Chi.</td></tr><tr><td>Cardiometabolic</td><td>30 min/session; 3x/week Moderate to vigorous intensity Examples of Exercises: I see « aerobic ».</td></tr></table> <p>If the client does not like continuous exercise, high intensity interval training is possible, i.e., periods of high intensity exercise interspersed with periods of rest or low intensity (e.g., 60 seconds of moderate to vigorous intensity, 90 seconds of active rest, for 8 sets).</p>	Aerobic	20 min/session; 2x/week Moderate to vigorous intensity Examples: cycling (with legs or arms), treadmill, walking, swimming, basketball, dancing, other sports...	Muscular Strength	2x/week. Choose a resistance heavy enough to the point where the person can barely complete the repetitions of the last set, yet still be safe. 1-2 minutes of rest between each set and exercise are required. Alternate the major muscle groups to be worked. Examples: resistance elastic bands, free weights, cable pulleys, weight machines, yoga, Pilates, Tai Chi.	Cardiometabolic	30 min/session; 3x/week Moderate to vigorous intensity Examples of Exercises: I see « aerobic ».
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Cardiometabolic	30 min/session; 3x/week Moderate to vigorous intensity Examples of Exercises: I see « aerobic ».						
Helping relationship/counseling	<ul style="list-style-type: none">- Ask the client if he/she is taking medication for blood pressure.- Some exercises may exacerbate spasticity in some individuals (assess on a case-by-case basis).						
Suggested adapted equipment	<ul style="list-style-type: none">- Gloves or straps to facilitate gripping (if unavailable, use elastic bandages).- Elastic bands or straps around the legs to prevent excessive abduction while using other equipment (e.g., cycling), or around the chest to stabilize the core.- Push-up gloves for wheelchair users.						

Figure 3 Excerpt from the APA toolkit on spinal cord injury.

Focus groups 2 and 3

Six kinesiologists participated in the focus group 2 (30 minutes). Previously expressed needs were validated as some participants were different kinesiologists than those who participated in focus group 1. All participants demonstrated interest in the APA toolkit, as they all mentioned reading the toolkit before the focus group and felt satisfied with the content. They also emphasized that they were looking forward to using the toolkit in their practice. The only question pertained to where to find specific information regarding contraindications.

Five kinesiologists participated in focus group 3 (45 minutes). All participants provided feedback and expressed overall satisfaction regarding the APA toolkit. The strengths of the toolkit were described as: “an accurate and varied selection of disabilities”; “very accessible content regarding the ease of finding the information”; and “complete and relevant evidence-based information to allow kinesiologists to easily adapt their approach to the client”. Participants emphasized that the toolkit responded to their APA knowledge needs. Suggestions for improvements included: add colors to improve the aesthetics; add visual references or photos to depict the adapted material proposed; include more space for taking notes; add a symbol to identify areas that have limited scientific information such that kinesiologists can be aware of the knowledge dearth (and seek information in the future); and modify the sections on intellectual disabilities and autism spectrum disorder to include more examples on its characteristics.

PHASE 2 – IMPLEMENTATION OF THE APA TOOLKIT

Eight kinesiologists participated in Phase 2 focus group 4 (including two who participated in all data collection during Phase 1). The other four participants were not available for the focus group, but they completed the questionnaires and answered focus group questions during their own time. Participants ranged in age from 22 to 28 years old and seven were female. Six participants were part-time employees and two were employed full-time. Five were employed at Adaptavie for less than 2 years, one for 2-4 years, and two for 5-7 years. Four were undergraduate kinesiology students, two had bachelor’s degree in kinesiology, and two had completed graduate studies in kinesiology.

Workplace Self-Efficacy Inventory Survey

There was a statistically significant increase in workplace self-efficacy after co-development and implementation of the toolkit (119(5) to 134 (6); p < 0.001). Table 1 summarizes individual workplace self-efficacy before and after development and implementation of the toolkit.

According to the Indicators of Success Questionnaire, seven out of eight participants ranked the overall usability and fidelity of the APA toolkit with a grade of A (excellent; >80.3) the other qualified it with a grade B (good; 60.0–80.3).

Focus group 4

The last focus group regarding the implementation of the toolkit was one hour. Three inter-related themes emerged from the data analyses, including: 1) “Adapted physical activity toolkit”, which revealed participants’ perceptions about format, content and structure; 2) “Kinesiologists’ self-efficacy and expertise”, which described changes in level of self-efficacy and knowledge after implementation of the toolkit; and 3) “Implementation in the workplace”, which explained participants’ satisfaction regarding toolkit implementation and recommendations for improvements for future implementation in other organizations.

Theme 1: “Adapted Physical Activity Toolkit”

All participants expressed satisfaction with the format of the APA toolkit (i.e., electronic document). It seemed to be *“easier to find information, especially with the ‘control/ find’ function.”* [participant 7] Some added that also having a printed version would improve the accessibility of the toolkit, as one person said, *“I’m fine with both electronic and print formats. Surely, when I don’t have my computer in the training rooms, I would love to have a paper version to bring with me and refer to.”* [participant 1] As for the structure of the toolkit, participants unanimously stated that, *“the sections and organization of the material regarding the selected disabilities suits us perfectly. Everything is clear, well-focused, illustrated and easy to understand. No sections are missing.”* [participant 2] Furthermore, all participants mentioned that the content itself was thorough and consistent with their knowledge and practical experience. Indeed, one highlighted the completeness of the information in the toolkit, saying *“I think it’s a good tool. I’ve never had a case where I was looking for information in it and couldn’t find it.”* [participant 8] Another emphasized how the content and choice of disabilities respond to their needs, reflecting, *“At the beginning of the study, we had gone through our database to see which disabilities we were seeing the most and would be useful to see in the toolkit. All of the selected disabilities are there, and I think the content is pretty thorough; there are no discrepancies with what I know, and everything makes sense. There are also no disabilities that I feel are missing... at the most, if we wanted to add something, we could have added information about anxiety, since it has increased since the pandemic.”* [participant 3]

Theme 2: “Kinesiologists’ Self-efficacy and Expertise”

All participants expressed feeling increased self-efficacy and increased knowledge and skills regarding their practice, as the toolkit addressed their needs directly regardless of their previous education and work experience. For example, a university student said: *“I like having an internship here to have access to this resource on different disabilities and adapted physical activities that we don’t see at all in our academic training. I can rely on it whenever I have questions; it’s really helpful and I learn a lot.”* [participant 4] As for the experienced kinesiologists, one said, *“What we wanted at the beginning was a toolkit that would reassure kinesiologists and compensate for their lack of knowledge about adapted physical activities. The toolkit more than fulfills its function and the fact of having super complete and detailed recommendations regarding a wide range of disabilities all in one accessible resource increases my confidence and skills in my practice.”* [participant 1] Another added that the toolkit can improve the customization and safety of PA programs: *“Having access to the toolkit and reading the relevant information about the client’s disability beforehand gives us more confidence to personalize our interventions. We feel more competent and confident that we are prescribing a good exercise program that won’t hurt the client and that we are going in the right direction with them by prescribing it.”* [participant 3] However, some university students still felt some uncertainty when using the toolkit as they were still inexperienced and expressed needing more time to put it into practice. As one student said, *“It is not because information is missing in the toolkit... I just don’t have the reflex to consult it yet. What would make me feel even more confident would be to accumulate work experience using the toolkit.”* [participant 5]

Theme 3: “Implementation in the Workplace”

All participants found that the implementation process (i.e., sending the toolkit by email) in Adaptavie “*was a success and both kinesiologists and clients benefited from it greatly.*” [participant 6] Participants emphasized that becoming familiar with the toolkit can be done independently by new employees and trainees, and thus may eliminate additional workload on kinesiologists. One participant explained, “*Each time there is a new employee I provide them with a copy of the toolkit, then if they have any questions they can talk to me. I find it a winning formula to introduce the toolkit in this way to an organization. It even empowers new employees and better their autonomy.*” [participant 1] A new intern added, “*I agree. It would be unthinkable to go through all the relevant elements pathology by pathology in a training. The toolkit itself is quite easy to use and intuitive, and looking through it helped me understand it fully on my own. It is very interesting, clear, useful and complete.*” [participant 4] As for the use of email in the implementation process, one participant preferred having a small initial meeting to discuss the toolkit. All other participants felt satisfied with receiving the toolkit by email and familiarizing with the content on their own time, suggesting it provided autonomy and did not increase burden given their schedule.

DISCUSSION

This study responded to a need to enhance knowledge, skills, and self-efficacy of Adaptavie staff. Based on focus groups and a review of literature, an APA toolkit was co-created with kinesiologists who work at Adaptavie to address this need. An implementation evaluation showed that the APA toolkit has an overall excellent usability and fidelity and enhanced their knowledge and self-efficacy in the workplace. A participatory approach between researchers and participants facilitated the co-creation and co-evaluation of this resource, which has been shown to enhance uptake and sustained use of the toolkit (Baum et al., 2006).

Kinesiologists explained how the toolkit enhanced knowledge, skills, and confidence to access to reliable APA resources, which was confirmed by a statistically significant improvement in work self-efficacy after one year of using the toolkit. Participants particularly reported perceived improvements in their problem-solving abilities, which may also enhance self-efficacy when faced with obstacles. For example, the toolkit may be consulted for a new client with specific needs regarding APA instead of using trial-and-error, a commonly used method reported by kinesiologists. Of note, the study was conducted over a period of more than one year, thus allowing the kinesiologists to use the toolkit in various contexts and for various activities during the year (e.g., certain periods are more marked by welcoming new clients, summer camps for youth, seasonal activities).

The use of the toolkit by kinesiologists to prescribe APA may have extended benefits for clients with disabilities, as prescription will be based on scientific evidence. Future studies should consider how such toolkits impact PA services among people with disabilities. Enhancing APA services could also improve PA experiences for people with disability, which may influence adherence to exercises (Marcus et al., 1998). Additionally, improved customization of PA programs has been associated with enhanced participation, motivation, personal development, and self-efficacy for physical activity in general (Marcus et al., 1998).

The toolkit is available in electronic and paper formats, in French and English, facilitating uptake and potential usability in the field. Availability in both official languages will facilitate the implementation and use of the toolkit by professionals from community organizations in other cities (eg., VioMax, a community partner based in Montreal who shared a similar need) and other Canadian provinces. Considering frequent staff changes at Adaptavie, the toolkit may be provided during initial training to enhance sustainability. To further support uptake and use of the toolkit, training modules for using the toolkit may be helpful. In fact, training has been shown to be effective for improving staff cohesion and level of self-efficacy at work (Bandura, 2012). The toolkit was introduced as an evidence-based tool to enhance current practices and not intended to replace other available resources such as the Canadian Society for Exercise Physiology (<https://csep.ca/>).

Limitations of this study include the small sample size representing kinesiologists from one community organization. Other health professions, such as occupational therapists, physiotherapists, physical education specialists, and coaches also provide APA services; however, they were not included in this study. Moreover, there were staff changes during the study period, and the availability of kinesiologists was variable (e.g., part-time employment, heavy workload). Therefore, there was variability in respondents throughout the study. However, to best meet the needs of the entire team, input from all kinesiologists who could not attend the focus groups was obtained in writing when possible. Finally, the goal of the literature review was not to be exhaustive, but to ensure a broad scope of literature that was inclusive of common disability types. Therefore, there may be relevant literature that was not included in the toolkit. In addition, the literature review was conducted once in 2019 to develop the toolkit; therefore, new studies published after the initial search were not included. Furthermore, among the articles included in the review, the samples were heterogeneous (for age and diagnosis), the presence of comorbidities was not always defined, and the level of functioning was not always described. These elements limit the generalizability of the results of the literature review.

CONCLUSION

The APA toolkit responded to an identified need to create a usable, evidence-based resource to improve knowledge and self-efficacy for providing APA services for people with disabilities identified by kinesiologists Adaptavie. The toolkit led to improved self-efficacy in the workplace and all participants were satisfied with using the toolkit. Future steps may include the implementation of the toolkit in other community organizations with similar needs or even mobilizing the tool in the current Quebec university program for kinesiologists, where there is lack of APA training.

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COMPETING INTERESTS

Perinet-Lacroix is the Director of programs and services at Adaptavie. de Serres Lafontaine, Batcho and Best have no conflicts of interest to declare.

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