

1 Social support in physical activity interventions for adults: An overview of reviews

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27 Reviews exploring social support in physical activity for specific adult populations are
28 numerous. There is a need to synthesize knowledge and translate evidence into practical
29 strategies to enhance social support in physical activity. The objective of this overview of
30 reviews was to synthesize supportive strategies in physical activity contexts for adult
31 populations. Standardized guidelines for conducting and reporting were followed. Twenty-three
32 reviews were identified, and data were summarized narratively. Supportive strategies were
33 categorized into nine social functions: feeling welcomed and included, making physical activity
34 fun, modelling physical activity, providing information, encouragement, mastery feedback,
35 autonomy support, emotional support, and fostering social connections. This review identified
36 supportive strategies that can be transferable to and tailored for a variety of adult populations
37 physical activity contexts. Fitness professionals play a key role in tailoring support to individual
38 participants, and providing social support for physical activity, for coping, and for developing
39 relationships.

40

41 **Keywords:** umbrella review, exercise, physical activity programs, fitness professionals,
42 instructors, supportive strategies

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44 Social support has been defined as interpersonal interactions that help another person by
45 contributing to positive outcomes such as well-being (Bianco & Eklund, 2001; House et al., 1985).
46 Supportive strategies are behaviours (actions, words, etc.) that serve supportive functions (e.g.,
47 emotional support, informational support). For example, supportive strategies such as providing
48 choices can serve the supportive function of autonomy support. Social support can be fostered
49 through physical activity participation (Zimmer et al., 2022) and can help adults initiate and sustain
50 physical activity behaviours (McAuley et al., 2003). Positive associations between social support
51 and physical activity have been found across various adult populations (e.g., adults with chronic
52 illnesses, non-clinical populations of adults, older adults; McDonough et al., 2019; Scarapicchia
53 et al., 2017; Zimmer & McDonough, 2022). However, physical activity participation in a group
54 does not inherently foster social support (Floyd & Moyer, 2010). There is a need to identify
55 strategies to provide and facilitate social support in adult physical activity.

56 Research on social support in the physical activity context typically focuses on
57 participants' general perceptions of feeling supported (McDonough et al., 2019). It is clear the
58 simple act of bringing individuals together for physical activity will not necessarily foster social
59 support (Floyd & Moyer, 2010). As such, recent studies have started exploring social support
60 behaviours other exercisers and fitness professionals can use to provide effective support (Craig
61 et al., 2023; Morrison, McDonough, Zimmer, et al., 2023; Zimmer et al., 2022). In adults, other
62 exercisers can support through camaraderie and acting as role models for engaging in physical
63 activity context (Rowland et al., 2019; Wayment & McDonald, 2017). For individuals living with
64 cancer or older adults, other exercisers can be critical for providing reassurance and comfort during
65 difficult times, and sharing similar life experiences (Craig et al., 2023; Zimmer et al., 2022).
66 Fitness professionals can provide forms of support such as engaging in autonomy and mastery

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67 supportive teaching, showing interest in participants, and facilitating group discussions amongst
68 participants (Craig et al., 2023; Morrison, McDonough, Zimmer, et al., 2023; Tweed et al., 2021).
69 Fitness professionals are also important for facilitating support between participants, such as
70 grouping or introducing those who have similar interests in adults living with cancer and older
71 adults, or including team building activities to engender social cohesion in adults (Craig et al.,
72 2023; Farrance et al., 2016; Spink & Carron, 1993). In addition, fitness professionals desire
73 training in how to foster social support via specific strategies and facilitation techniques so they
74 can intentionally promote and improve their ability to support their participants (Craig et al., 2023).

75 Fitness professionals must be able to address the social support needs of all adults in their
76 physical activity classes. Intentionally enabling access, inclusion, and support in physical activity
77 is particularly important for populations that are more likely to experience marginalization and
78 social isolation, or whose members may have greater support needs. For example, providing
79 autonomy-based instruction was supportive for adults living with a mental illness (Ashdown-
80 Franks et al., 2022) and providing clear messages of acceptance and inclusion was supportive for
81 women in gay square-dancing (Beselt et al., 2023). Providing opportunities for connection within
82 physical activity was also experienced as supportive among men diverse in ethnocultural
83 backgrounds and sexual orientation (Bennett et al., 2023). Physical activity classes are also offered
84 in diverse formats (e.g., in person vs. online, registered vs. drop-in) and these contextual
85 differences may have implications for how social support is provided given factors such as the
86 opportunities available for socializing, consistency of group membership, etc. Considering the
87 variety of support needs and physical activity contexts is important for developing inclusive
88 resources and training to help fitness professionals build a repertoire of supportive strategies. Yet,
89 no synthesis is available summarizing knowledge into practical strategies to improve social

90 support in the adult physical activity context. Using an overview of reviews methodology can
91 provide those interested in fostering social support in physical activity with evidence-based
92 guidance.

93 This overview of reviews addresses a major gap in the social support and physical activity
94 literature by identifying and synthesizing supportive strategies across adult populations. Within
95 this review, the focus was on functions and strategies for supporting adults in the physical activity
96 context, rather than measuring general social support perceptions or looking at the association
97 between social support and physical activity outcomes, as past reviews have done (e.g., Lindsay
98 Smith et al., 2017; Scarapicchia et al., 2017). Several reviews examining social support in physical
99 activity have been published, but most have focused on specific populations, such as those with a
100 common chronic condition (e.g., cancer; McDonough et al., 2019) or within a demographic group
101 (e.g., older adults; Lindsay Smith et al., 2017). While understanding the needs of specific
102 populations is important, there may be commonalities among social support processes across
103 populations and strategies that have been identified in one population that have potential benefits
104 for others. Therefore, all adult populations were included, whether they focused on adults generally
105 or on a specific subset of the adult population. Synthesizing extant evidence using overview of
106 review methodology would promote a broader understanding and enhance the strength of previous
107 research within and across populations.

108 **Purpose**

109 The purpose of this overview of reviews was to synthesize existing knowledge on strategies
110 for providing and facilitating social support in physical activity contexts for adults. In focusing on
111 adults generally, we paid attention to strategies which cut across work with adult subpopulations,
112 and strategies that were only identified in research with specific subpopulations. This review

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113 addressed the following research questions: (1) what strategies are in the literature for providing
114 and facilitating social support in physical activity contexts; (2) what information pertaining to
115 supportive functions could be translated into practical strategies; and (3) which strategies and
116 functions are relevant to support provided by fitness professionals and participants?

117 **Methods**

118 The JBI Manual for Evidence Synthesis of Umbrella Reviews (Aromataris et al., 2020)
119 was followed and the Preferred Reporting Items for Overviews of Reviews statement was utilized
120 to guide reporting of the overview (Gates et al., 2022). A protocol was also registered with
121 PROSPERO International Prospective Register of Systematic Reviews ([CRD42022376261](https://www.crd42022376261)).

122 **Eligibility criteria**

123 Studies were included if they met the following criteria: (1) they were a review (of any
124 methodology), (2) participants were adults ≥ 18 years of age, (3) the interventions included were
125 group or one-on-one physical activity that involved a fitness professional providing instruction,
126 (4) they reported on specific components of what was done to provide support (e.g., social support
127 functions, supportive strategies, specific types of social support), (5) support was provided by
128 fitness professionals and/or other exercisers in the physical activity, (6) they were published in
129 peer-reviewed journals, and (7) they were published in English. Studies were excluded if: (1) they
130 were examining lifestyle physical activity outside of the context of a program or intervention; or
131 (2) authors reported only on a global, overall, or composite social support variables that did not
132 provide information about what was done to provide support (e.g., social well-being, social
133 functioning, perceptions of feeling supported).

134 **Information sources**

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135 Six databases were searched: MEDLINE, EMBASE, APA PsycINFO, CINAHL,
136 SPORTDiscus, and Cochrane Database of Systematic Reviews from all years up to October 20,
137 2023, when the updated search was conducted. These databases were searched through Ovid,
138 EBSCOhost, and the Cochrane Library interfaces. Nineteen content experts (i.e., academics,
139 municipal and community recreation organizations, and individuals involved in coordination and
140 delivery of adult physical activity programs) in four major Canadian cities were consulted through
141 email and videoconference on September 14, 2022 to see if they were aware of reviews to include.

142 **Search strategy**

143 The authors developed and provided input on key words for the search strategy with a
144 research librarian at the University of Calgary. The search strategy included terms related to social
145 support and physical activity, and excluded terms related to children (e.g., youth). The search was
146 restricted to peer-reviewed journal articles and articles about humans only (which removed animal-
147 based records), where able. An example of the search strategy terms is in Supplementary A.

148 **Selection process**

149 Two authors (BC and LM) screened 20-30 abstracts independently and in duplicate
150 (Polanin et al., 2019) until a “definite yes”, “maybe”, and “definite no” decisions were made to
151 pilot-test the screening form (Lefebvre et al., 2022). Any disagreements regarding the screening
152 criteria were discussed with a third reviewer (MM) and the screening form was revised
153 accordingly. An inter-rater agreement of $\geq 80\%$ was needed when pilot testing the screening form,
154 before moving on to the next phase of screening (McHugh, 2012). Titles and abstracts of studies
155 were retrieved using the search strategy and screened in Covidence Systematic Review Software
156 (Veritas Health Innovation, 2022) independently and in duplicate by BC and LM (Eden et al.,
157 2011). Full-text screening of potentially eligible studies was conducted independently and in

158 duplicate. All disagreements regarding eligibility of a particular study at any stage were resolved
159 through discussion with MM.

160 **Data collection process**

161 A standardized, pre-piloted form was used to extract data from the included studies for data
162 synthesis. The form was piloted with two studies of different review types. BC and LM completed
163 data extraction independently and compared the extracted data to achieve agreement. To identify
164 and manage primary study overlap, a Microsoft Excel spreadsheet was created and reviews
165 reporting on similar adult populations were compared. Given the purpose of the overview was to
166 identify supportive strategies and narratively synthesize, the authors were not concerned about
167 overstating or reporting data multiple times and data were extracted from reviews with overlapping
168 primary studies.

169 **Data items**

170 Data extracted from the reviews included: author; year; location; type of review; summary
171 statistics on study populations and participant demographics; number of studies included in the
172 review; details about types of physical activity interventions included in the review; strategies for
173 providing and facilitating social support; statistical information about associations (where
174 applicable); and how study quality, reporting bias, and certainty were assessed. When data within
175 any of these domains were missing or unclear, BC and LM reviewed the primary study reports to
176 try to obtain the information. Reviewers reported any remaining missing or unclear data in the
177 extraction sheet. For more information on how data were extracted regarding reporting bias and
178 certainty assessments, see Supplementary B.

179 **Risk of bias assessment**

180 The JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses

181 (Aromataris et al., 2015) was used by BC and LM independently to assess the quality and risk of
182 bias of included studies. MM was consulted when needed to achieve agreement. A judgment was
183 not made about the overall study quality, as the purpose of the review was to identify supportive
184 strategies, and therefore reviews were not excluded based on study quality. For more information
185 on how risk of bias was assessed see Supplementary B. Study quality of primary studies included
186 in each review was extracted from the reviews. The methodological quality or risk of bias tool(s)
187 used, information about how the tool(s) were used, and overall ratings of primary study quality
188 were extracted from the reviews. New assessments of primary studies were not undertaken.

189 **Synthesis methods**

190 Findings from the included review studies were synthesized through narrative synthesis.
191 We identified supportive strategies from each review, which were then put into a table and grouped
192 with other strategies inductively across reviews. Strategies that contributed to similar supportive
193 functions (as identified by their respective review) were grouped. A narrative synthesis was
194 deemed appropriate given study objectives and our interest in identifying supportive strategies,
195 and were drawing on evidence from across all types of study design, which precluded an entirely
196 quantitative or qualitative synthesis.

197 **Results**

198 **Review selection and characteristics**

199 After the initial and the updated search of the six databases, a total of 3668 articles were
200 found. After duplicate removal (1352 removed) and title and abstract screening (2209 removed),
201 a total of 107 reviews remained. After full-text screening, a final total of 23 review articles were
202 included in this overview of reviews. A list of the 84 reviews that were excluded in the full-text

203 screening is available upon request. See Figure 1 for the PRISMA flow diagram (with reasons for
204 exclusion included).

205 The characteristics of the 23 included reviews can be found in Supplementary C. The
206 studies were published between 2016 and 2023, mainly conducted in the United Kingdom (n = 8)
207 or Canada (n = 5), and used a variety of quantitative and/or qualitative review types. The most
208 common populations investigated were older adults and/or adults living with a chronic illness (n
209 = 21). There was only one review that did not focus on a specific adult subpopulation (i.e., Rato
210 Barrio, 2021) and another that included findings for adults and older adults (i.e., Harvey & Griffin,
211 2020). Participant age ranged from 18 to 99 years, in the 13 reviews that reported on age. All
212 reviews included studies that had a physical activity program (namely community-based, primary
213 care/medical setting, rehabilitation or prevention, or recreational sport or sport-based programs),
214 and consisted of a wide variety of activity types (e.g., resistance training, yoga, dance). Most
215 programs were in person and group-based, but some were individually tailored programs, home-
216 based, or online. The latter programs met the inclusion criteria because support strategies were
217 provided by a fitness professional. In some cases, not all primary study results in a given review
218 met the inclusion criteria, so only those that were relevant to our inclusion criteria were extracted.

219 There was some primary study overlap wherein 15 studies focused on older adults were
220 included in two or more reviews, and one review of this population was included in an umbrella
221 review that was part of our review. Fourteen studies focused on adults living with cancer were
222 included in two or more reviews. Four studies focused on older adults with cognitive impairment
223 were included in two or more reviews, and one review of this population was included in an
224 umbrella review that was part of our review. Given the objective of this overview of reviews was
225 to capture all potential social support strategies in the literature, the overlap did not impact results.

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226 A citation matrix is available upon request.

227 A table showing the critical appraisal of each included review using the JBI Critical
228 Appraisal Checklist for Systematic Reviews and Research Syntheses (Aromataris et al., 2015), as
229 well as a summary of the results is provided in Supplementary D. A summary of reporting biases
230 and certainty evidence results are provided in Supplementary B under the corresponding heading.

231 **Summary of results**

232 The specific supportive strategies, sources of support, and which reviews identified each
233 supportive strategy are provided in Table 1. The narrative synthesis focuses on describing the types
234 of strategies included in each supportive function. The strategies were synthesized into nine
235 supportive functions: feeling welcomed and included, making physical activity fun, modelling
236 physical activity, providing information, encouragement, mastery feedback, autonomy support,
237 emotional support, and fostering social connections.

238 **Feeling welcomed and included**

239 This theme includes strategies that helped participants feel comfortable within the physical
240 activity context. Strategies in this theme were identified by 20 of the 23 reviews, and were
241 documented in adults, older adults, older adults with cognitive impairments, adults with chronic
242 illnesses (e.g., cancer, Parkinson's disease, cardiovascular disease, osteoarthritis), adults at risk of
243 various health conditions, and mental health service users. When fitness professionals helped
244 participants become comfortable with the physical activity program and others in the program, it
245 was deemed to be supportive. Particularly for populations who needed more assistance (e.g., adults
246 with cognitive impairment), it was important that fitness professionals were close and available to
247 answer questions or explain the activity further, so participants were comfortable and familiar with
248 elements of the program (e.g., Collado-Mateo et al., 2021). Engendering trust between participants

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249 and fitness professionals was also important for creating comfort and could be attained, for
250 example, by fitness professionals sharing their credentials and being mindful of their language and
251 actions (e.g., avoiding ageist language in older adult populations; Harvey & Griffin, 2020).
252 Facilitating initial social interactions was critical for helping participants feel welcomed and
253 included at the beginning of a program (e.g., initiating speaking to newer participants; Beselt et
254 al., 2021). Keeping these interactions going throughout the activity fostered a continued feeling of
255 inclusion (e.g., following up and checking in with participants regularly; McDonough et al., 2021).
256 Other exercisers (specifically those with shared experiences or commonalities such as an illness
257 or diagnosis) played a supportive role in making participants feel comfortable by creating a context
258 where they did not have to explain their physical appearance or ailments (e.g., not wearing a wig
259 while exercising; Browall et al., 2018).

Making physical activity fun

261 This theme includes strategies that enhanced or emphasized enjoyment in the physical
262 activity context. Strategies in this theme were identified by 15 of the 23 reviews, and were
263 documented in adults, older adults, adults with chronic breathlessness, cancer, or osteo-arthritis,
264 and mental health service users. Different facets (e.g., the physical activity, social interactions)
265 were found to be enjoyable elements of the context. Fitness professionals set the tone for making
266 physical activity fun by highlighting the social aspects and atmosphere (e.g., acknowledging being
267 active together was fun; Bradford et al., 2023). Recognizing and utilizing the potential fun of the
268 social atmosphere was especially important to emphasize in group physical activities to motivate
269 participants to keep attending and for participants who previously found solo physical activities to
270 be boring (e.g., Devereux-Fitzgerald et al., 2016). In some cases, being able to interact with others
271 was a primary reason for participants wanting to continue attending physical activity programming

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272 (e.g., Koren et al., 2021). Engaging in laughter, joking, and banter were particularly crucial for
273 participants having fun, with fitness professionals playing a key role in setting expectations or
274 norms for these types of interactions as a leader in the physical activity environment. It was also
275 supportive to tailor the activity to what participants find fun (e.g., intentionally repeating fun
276 activities; Sandlund et al., 2017).

277 **Modelling physical activity**

278 This theme describes fitness professionals and other exercisers serving as role models or
279 demonstrating what is possible through physical activity participation. Strategies in this theme
280 were identified by 16 of the 23 reviews, and were documented in adults, older adults, older adults
281 with cognitive impairments, adults with chronic breathlessness, with cancer, at risk of various
282 health conditions, and with osteo-arthritis, and mental health service users. Fitness professionals
283 and other exercisers acted as role models through their engagement in physical activity (e.g.,
284 partaking in the activity alongside participants; Tweed et al., 2021) or through their interactions
285 with participants and how they communicated about their physical activity participation or
286 lifestyle. Other exercisers with whom participants could identify (e.g., were similar in age, had a
287 common illness or disease) modelled being physically active and coping with ailments or disease,
288 by showing what they were able to do or accomplish in the physical activity setting despite their
289 life challenges (e.g., McDonough et al., 2021). Although comparing oneself to others can have
290 harmful impacts in physical activity contexts, in some reviews, it was shown to be encouraging
291 when participants compared themselves to others who were similar, but only when they were doing
292 well (e.g., in good health or coping well with a disease or impairment; Booth et al., 2019).
293 Intentionally modelling physical activity and sharing information about one's physically active

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294 lifestyle, without invoking comparisons or competition, can enhance the social support participants
295 receive.

296 **Providing information**

297 This theme includes sharing information about physical activity opportunities, maintaining
298 physical activity participation, and benefits of being active. Strategies in this theme were identified
299 by 15 of the 23 reviews, and were documented in adults, older adults, older adults with cognitive
300 impairments, adults with chronic illnesses (e.g., cancer, Parkinson's disease, cardiovascular
301 disease, osteoarthritis), adults at risk of various health conditions, and mental health service users.
302 Fitness professionals could be supportive by providing information to help participants engage in
303 the current physical activity (e.g., sharing evidence-based benefits of participating; Chen et al.,
304 2023), or by sharing other opportunities and resources for remaining active (e.g., when programs
305 are ending; Dunston et al., 2022). Providing reminders and communicating regularly was
306 identified as supportive, particularly in reviews with populations who needed more reminders
307 (e.g., adults with cognitive impairment; Collado-Mateo et al., 2021). Information can be especially
308 helpful when the support provider tailors or personalizes it to the recipient's goals, needs, or
309 interests (e.g., personalized recommendations for activity; Hurley et al., 2018). Personal
310 recommendations that came from fitness professionals or other exercisers who participants trusted
311 or had friendships with were particularly supportive (McDonough et al., 2021). Specifically, other
312 exercisers could share information, exchange ideas, or provide suggestions about treatment or
313 coping if they shared an experience or adversity in common with participants such as an illness
314 (e.g., Lu et al., 2023).

315 **Encouragement**

316 This theme includes messages and behaviours that enhanced confidence and prompted

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317 participants to do or try something in the physical activity context. Strategies in this theme were
318 identified by 19 of the 23 reviews, and were documented in adults; older adults; older adults with
319 cognitive impairments; adults at risk of various health conditions, with cancer, and with osteo-
320 arthritis; and mental health service users. Fitness professionals supported participants to engage in
321 physical activity through their tailored exercise instruction (e.g., providing guidance on what
322 activities to do, considering participant needs; deLacy-Vawdon et al., 2018) and through group or
323 individualized encouragement about the activity (e.g., verbal and/or nonverbal encouragement).
324 Fitness professionals could encourage physical activity behaviour when they considered
325 participants' needs, abilities, and past physical activity experiences to be able to tailor their
326 recommendations to set participants up for success in the activity (e.g., Price et al., 2023).
327 Providing encouragement when participants are attempting a challenging pursuit that they have
328 the ability to accomplish, but without pressuring them, is supportive (e.g., McDonough et al.,
329 2021). Sharing the success stories of similar others can also instill confidence and support for
330 engaging in physical activity (e.g., Eynon et al., 2019).

331 **Mastery feedback**

332 This theme highlights positive responses that focus on participants' personal improvement
333 and effort, and limits judgements based on comparisons with others and competition. Strategies in
334 this theme were identified by 11 of the 23 reviews, and were documented in adults, older adults,
335 adults with chronic illnesses (e.g., cancer, Parkinson's disease, cardiovascular disease), adults at
336 risk of various health conditions, and mental health service users. Fitness professionals were the
337 main providers of mastery feedback. During physical activity, fitness professionals vocalized
338 positive and individualized feedback, praise and reinforcement, as well as emphasized and
339 reminded participants of group-based programs that it was a non-competitive environment and to

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340 focus on themselves (e.g., McDonough et al., 2021). Fitness professionals were instrumental in
341 supporting participants' mastery by assisting with setting measurable group or individual goals
342 that were focused on effort and improvement (e.g., Sandlund et al., 2017). Other exercisers could
343 also provide feedback and reinforcement to participants (e.g., Eynon et al., 2019).

344 **Autonomy support**

345 Autonomy support describes support that encourages participants' volition, choice, and
346 voice, and minimizes controlling behaviour. Strategies in this theme were identified by 13 of the
347 23 reviews, and were documented in adults, older adults, older adults with cognitive impairments,
348 adults with chronic illnesses (e.g., cancer, Parkinson's disease, cardiovascular disease), adults at
349 risk of various health conditions, and mental health service users. Fitness professionals were the
350 main autonomy support providers in the physical activity context. Tailoring the class to align with
351 participants' physical activity goals (e.g., adopting participants' perspectives in relation to their
352 goals; Rato Barrio et al., 2021) and incorporating their ideas and feedback supported autonomy.
353 Furthermore, following the participants' lead enhanced their agency or control over their behaviour
354 (e.g., reminding participants to listen to their body; Devereux-Fitzgerald et al., 2016). Reminding
355 participants to not do more than they felt they were able to do in that moment fostered autonomy
356 and was noted as supportive, particularly in older adults and adults living with cancer. Where
357 applicable, some fitness professionals also allowed participants to contribute any skills or expertise
358 they had (e.g., if they had knowledge about a particular activity or past experience as an instructor),
359 and in some cases provided opportunities for those participants to help lead the class as a peer
360 instructor or assistant (Harvey & Griffin, 2020). Ultimately, it is important to tailor or modify
361 reminders or suggestions to align with participants' perspectives, goals, needs, and preferences,
362 but to also ensure this is not done in a pressuring or controlling way (e.g., McDonough et al.,

363 2019).

364 **Emotional support**

365 This theme highlights strategies that showed care, compassion, and communicated social
366 support was available if needed. Strategies in this theme were identified by 17 of the 23 reviews,
367 and were documented in adults; older adults; older adults with cognitive impairments; adults with
368 chronic breathlessness, cancer, osteo-arthritis, and at risk of various health conditions, as well as
369 mental health service users. Fitness professionals and other exercisers established an emotionally
370 supportive atmosphere in physical activity contexts by demonstrating kind and sincere qualities
371 towards participants and expressing concern and compassion for their feelings. Fitness
372 professionals allowed space for support that occurred organically among participants, which often
373 made the environment more conducive to shared learning, support, and experiences (e.g., Price et
374 al., 2023). When participants needed extra support, fitness professionals would be more hands-on
375 and serve as social coordinators, directing those participants to appropriate support within or
376 outside the group (e.g., Farrance et al., 2016). For adults facing challenges or adversity, checking
377 in to see how they were doing (particularly if they were absent from physical activity) and letting
378 them know they were cared about and missed, helped them feel emotionally supported (e.g.,
379 Bradford et al., 2023). Other exercisers facing similar adversities provided emotional support
380 through shared experience or understanding, as well as with dark humour and jokes that broke
381 taboos about their adversity and may be uncomfortable in other settings or around people who did
382 not have that shared understanding (McDonough et al., 2021).

383 **Fostering social connections**

384 This theme includes strategies that create a climate where social connections can evolve.
385 Strategies in this theme were identified by 9 of the 23 reviews, and were documented in adults,

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386 older adults, adults with a chronic illness (e.g., cancer, cardiovascular disease, Parkinson's
387 disease), and mental health service users. Fitness professionals facilitated social connections by
388 how they structured physical activity (e.g., leaving time for informal conversations; deLacy-
389 Vawdon et al., 2018). Grouping or introducing participants with similar experiences or needs also
390 helped foster social connections because they could understand and relate to one another (e.g.,
391 Farrance et al., 2016). Furthermore, facilitating group discussions helped participants get to know
392 one another and feel included and involved. In some cases, other exercisers planned and
393 participated in social gatherings together outside of the physical activity context (e.g., coffee
394 meetups; Beselt et al., 2021), which further developed support networks (Tweed et al., 2021).
395 Fitness professionals also encouraged or suggested these gatherings, or assisted with organizing if
396 it was consistent with their role.

397 **Discussion**

398 The aim of this overview of reviews was to identify supportive functions and strategies that
399 fitness professionals and other exercisers can use to support adults in physical activity settings.
400 Extracted supportive strategies were synthesized into nine supportive functions: feeling welcomed
401 and included, making physical activity fun, modelling physical activity, providing information,
402 encouragement, mastery feedback, autonomy support, emotional support, and fostering social
403 connections. While many strategies were reported across reviews and different adult populations,
404 some were only described within a specific population. The practices identified in this overview
405 of reviews may provide a common basis for understanding strategies for providing social support
406 for adults in physical activity contexts. These practices can be supplemented by knowledge about
407 the needs of particular populations and communication with individual participants about their
408 needs and preferences.

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409 Most supportive strategies identified were reported across multiple reviews and adult
410 populations. Nearly all strategies within *making physical activity fun* and *modelling* were
411 documented across adult populations. These strategies are often positioned in the physical activity
412 literature as being motivating (Costello et al., 2011) or building self-efficacy through vicarious
413 experience (Bandura, 1977), respectively. Our findings show they may also be important for
414 impacting a persons' perception of feeling socially supported in physical activity. For example,
415 across populations, fitness professionals used the supportive strategies of providing evidence-
416 based information about benefits of physical activity and letting participants know about their
417 certifications to engender trust. Other exercisers were supportive by modelling being physically
418 active and sharing information and ideas. Furthermore, both fitness professionals and other
419 exercisers were supportive by listening and getting to know participants and being open to or
420 allowing socializing during the activity. While the ability of fitness professionals and/or other
421 exercisers to demonstrate understanding and empathy when participants were facing adversity and
422 to share their own experiences may seem to only apply to groups facing extreme adversities (e.g.,
423 cancer diagnosis), it was documented across adult populations. Everyone can experience adversity
424 and it may be important for fitness professionals to have training on how to act and what to do if
425 distressing situations arise. Although much primary and review literature has been population-
426 specific, many supportive strategies were identified across adults represented in this overview.

427 Supportive strategies reported only for certain populations were also identified. For
428 example, a number of strategies were only found within reviews focused on older adults (e.g.,
429 structuring collaborative activities to work with different people). Older adults tend to be at greater
430 risk of social isolation and/or exclusion and decreased social participation (Government of Canada,
431 2014; International Federation on Ageing, 2012), therefore, ensuring collaboration and

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432 socialization are incorporated into the physical activity context may be particularly important for
433 this group. Communicating about setting goals and making improvements, and sharing ideas to
434 help participants meet physical activity goals or remain active were also only documented in older
435 adults. Other supportive strategies were identified specifically within adults living with cancer
436 (e.g., using dark humor about adversity), or populations with a diagnosis or chronic illness (e.g.,
437 space provided for participants to have shared learning, support, and experiences). These strategies
438 may be especially important for those facing adversity or who do not have people in their life (e.g.,
439 family, friends) with an implicit understanding of what they are going through. Most reviews
440 focused on older adults or adults living with cancer. Therefore, these populations have greater
441 representation in our results and may explain why some strategies are only documented within
442 these groups. The strategies identified in this section were reported within certain populations,
443 however they may be supportive and relevant to other adult populations who may be at risk of
444 social isolation or have a shared experience as well.

445 Many reviews highlighted tailoring support by considering individual needs, providing
446 individualized encouragement and feedback, asking about and listening to participants' physical
447 activity goals and preferences, and tailoring reminders and suggestions with participants' goals.
448 Tailoring support to individuals in a group physical activity setting can enable people to participate
449 together and not feel left out, regardless of skill or ability (Morrison, McDonough, Hewson, et al.,
450 2023). Fitness professionals sharing information about their certifications, expertise, or experience
451 was reported across many populations, but this was especially important for groups with specific
452 needs who wanted a leader with knowledge of their particular condition or circumstance (e.g.,
453 knowledge of gerontology when working with older adults; Harvey & Griffin, 2020). It is
454 important to acknowledge that people's preferences vary in what they find enjoyable and whether

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455 they enjoy the social context of physical activity. Communicating and understanding participants'
456 perspectives and requests may be essential for making physical activity enjoyable for everyone.

457 Fitness professionals may learn many strategies identified in this review in their general
458 training for becoming an instructor, coach, etc., (e.g., giving clear instructions) but acknowledging
459 these strategies can also be socially supportive to participants may be beneficial. Furthermore,
460 fitness professionals can provide support for specific things, such as support for physical activity
461 (e.g., providing guidance on what to do and how to do it), support for coping with life stressors or
462 adversity (e.g., checking in with those who are absent or facing adversity), and support for forming
463 interpersonal relationships (e.g., showing genuine interest and listening). It has been argued the
464 role of fitness professionals has shifted to meet the demands of diverse needs of individuals and
465 practice expectations (e.g., trainer, counsellor, life consultant), and this is outside their scope of
466 practice (De Lyon et al., 2017). Providing fitness professionals with tools to support clients within
467 their scope, and to understand boundaries of that support is critical. Including supportive strategies
468 in formal training may help fitness professionals feel more confident supporting their clients and
469 enhance their existing knowledge and competencies. Specific strategies for providing social
470 support are often not emphasized in fitness professionals' training (Craig et al., 2023). Developing
471 a positive, supportive relationship with physical activity participants is crucial for their continued
472 participation (Shore et al., 2022), underscoring the importance of acknowledging and
473 incorporating social support evidence into fitness professionals' formal training.

474 Some reviews highlighted program elements which were not included in our results but
475 that may impact participants' experiences of social support. Having an instructor that looks like or
476 has similar experiences to participants can be supportive because participants can identify with
477 them and feel they understand what participants are experiencing (Craig et al., 2023; Harvey &

478 Griffin, 2020). At the administrative level, structuring activities so participants can be with peers
479 who have similar interests, needs, experiences, and demographics (e.g., age, gender, language,
480 culture, religion) can facilitate connectedness and foster belonging (Browall et al., 2018; De Lacy-
481 Vawdon et al., 2018; Eynon et al., 2019; Farrance et al., 2016; Livsey & Lewis, 2018; McDonough
482 et al., 2021; Sandlund et al., 2017). Older adults in programs which grouped participants of similar
483 ages had greater perceptions of social cohesion than programs for mixed ages (Beauchamp et al.,
484 2018, 2021). Furthermore, there is a growing need for programs that are culturally tailored and are
485 offered in languages other than English (Bansal et al., 2023; Nau et al., 2021). Future research
486 could explore how supportive strategies interface with program characteristics, and how certain
487 components might facilitate or create barriers to social support.

488 **Limitations**

489 Limitations include those of all overview of reviews (e.g., primary studies within reviews
490 included in the overview have already been selected, appraised, extracted, and synthesized by other
491 researchers) or reviews in general (e.g., possibility of omitting relevant studies or errors in study
492 selection, study appraisal, and data extraction). We also did not make new assessments of study
493 quality, reporting bias, and certainty because we included reviews regardless of their study quality.
494 Many reviews included research from older adult and cancer populations, so other groups' social
495 support needs may be underrepresented. Future research should focus on racialized and
496 marginalized groups and their unique support wants and needs in physical activity. Lastly, our
497 findings may disproportionately reflect adults who are English speaking.

498 **Conclusion**

499 This overview of reviews synthesized social support functions and strategies in physical
500 activity across various adult populations. Our findings identified nine themes of supportive

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501 strategies which may be transferable across or can be tailored for specific adult populations. These
502 supportive strategies can inform training for fitness professionals to enhance their practical skills
503 in providing social support for various adult populations. Fitness professionals can also tailor
504 support at the individual level, and acknowledge that many of their strategies for providing
505 instruction can have social benefits for participants. Furthermore, these social benefits can be
506 social support for physical activity, for coping with stress or adversity, and/or for forming
507 interpersonal relationships. The literature on which these reviews draw, while diverse, contains
508 biases, and there is less representation of populations that are more likely to experience
509 marginalization. There is a continued need for research to focus on the social support needs of
510 diverse groups in physical activity.

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732 Table 1

733 *Synthesis of supportive functions and strategies*

Supportive Functions	Supportive Strategies	Source of Support	Review Studies
Feeling welcomed and included	Sharing information about your certifications and experience with participants to engender trust in your instruction/suggestions/support.	FP	Beselt, 2021; Booth, 2019; De Lacy-Vawdon, 2018; Devereux-Fitzgerald, 2016; Dunston, 2022; Eynon, 2019; Farrance, 2016; Harvey, 2020; Livsey, 2018; Lu, 2023; McDonough, 2021; Price, 2023; Sandlund, 2017
	Orient participants to the space, equipment, program, other participants, staff, etc.	FP	Collado-Mateo, 2021; Dunston, 2022; Eynon, 2019; Hurley, 2018
	Structure collaborative activities so participants work with different partners or groups over time so they can meet many people.	FP	Beselt, 2021
	Be available (e.g., depending on the activities, consider circulating among the participants) so you are approachable and can address concerns and doubts one-on-one.	FP	Collado-Mateo, 2021; Eynon, 2019; Rato Barrio, 2021
	Be mindful of your language and actions to avoid stereotypes (e.g., agism, treating participants like patients, etc.)	FP	Harvey, 2020; Livsey, 2018; McDonough, 2021
	Introduce yourself	FP, OE	Beselt, 2021; McDonough, 2021
	Check in with participants regularly by asking how they are doing, and following up about things they have talked with you about.	FP, OE	Beselt, 2021; McDonough, 2021
	Initiate speaking to new participants	FP, OE	Beselt, 2021; McDonough, 2021
	Show genuine interest in participants, listen to them, and make an effort to get to know them.	FP, OE	Chen, 2023; Dunston, 2022; Harvey, 2020; Hurley, 2018; Koren, 2021; McDonough, 2021; Tweed, 2021

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	Normalizing appearance (e.g., people who lost hair from chemotherapy not wearing a wig), by not explaining or drawing attention to it.	OE	Browall, 2018; Livsey, 2018; McDonough, 2021
Making physical activity fun	Acknowledge that the group environment and being active together can be enjoyable.	FP	Bradford, 2023; Browall, 2018; Devereux-Fitzgerald, 2016; Hurley, 2018; Koren, 2021; McDonough, 2021; Sandlund, 2017
	Frame physical activity and the specific context as fun and social.	FP	Browall, 2018; Devereux-Fitzgerald, 2016; Farrance, 2016; Harvey, 2020; Hurley, 2018; Sandlund, 2017; Tweed, 2021
	Intentionally include or repeat physical activities participants find fun.	FP	Sandlund, 2017
	Participate in and encourage respectful and inclusive laughter, joking, bantering, celebrations.	FP, OE	Beselt, 2021; Devereux-Fitzgerald, 2016; Farrance, 2016; Koren, 2021; McDonough, 2021
	When safe and not interfering with participants' ability to hear the instructions and do the activity, allowing or being open to participants talking to others during activities.	FP, OE	De Lacy-Vawdon, 2018; Dunston, 2022; Hurley, 2018; Koren, 2021; McDonough, 2021; Nelson, 2023; Price, 2023; Sandlund, 2017; Tweed, 2021
Modelling physical activity	Draw attention to other people's behaviour to enhance participants' commitment to the group and to their physical activity goals.	FP	Browall, 2018; Koren, 2021; Rato Barrio, 2021; Sandlund, 2017
	Participating together can create obligation to show up and work hard.	FP, OE	Beselt, 2021; Eynon, 2019; Hurley, 2018; Koren, 2021; McDonough, 2021; Tweed, 2021
	Be physically active in ways that are visible to participants (e.g., taking part in the activity with them) and communicating about your physically active lifestyle without invoking comparisons or competition.	FP, OE	Beselt, 2021; Chen, 2023; Lu, 2023; McDonough, 2019, 2021; Tweed, 2021
	Modelling being positive and passionate about physical activity and that it is fun.	FP, OE	Farrance, 2016; Harvey, 2020; Lu, 2023; Rato Barrio, 2021
	Communicating about experience with setting goals and making improvements.	FP, OE	Beselt, 2021

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	Modelling being physically active and coping with aging, health issues (e.g., dementia, cancer), etc., if applicable.	OE	Beselt, 2021; Eynon, 2019; Hurley, 2018; McDonough, 2021; Tweed, 2021
	Comparing to similar others when they are doing well (e.g., being of good health, coping with disease).	OE	Booth, 2019; Bradford, 2023; Eynon, 2019
	Seeing others benefit from participating in physical activity.	OE	Booth, 2019; Hurley, 2018; McDonough, 2021
	Seeing similar others engaging in physical activity and showing what they can do.	OE	Beselt, 2021; Bradford, 2023; Eynon, 2019; McDonough, 2019, 2021
Providing information	Regularly check in and remind participants about information they need relative to their current class/program/group/etc.	FP	Beselt, 2021; Collado-Mateo, 2021; McDonough, 2021
	Provide evidence-based information about the benefits of participating in physical activity.	FP	Beselt, 2021; Booth, 2019; Chen, 2023; Collado-Mateo, 2021; Devereux-Fitzgerald, 2016; Dunston, 2022; Eynon, 2019; Hurley, 2018; Livsey, 2018; McDonough, 2021; Sandlund, 2017; Tweed, 2021
	Provide guidance on identifying and overcoming barriers to physical activity.	FP	Chen, 2023; Hurley, 2018; Tweed, 2021
	Provide information or options for other programs/resources/opportunities for physical activity. This is particularly important if current opportunity is ending.	FP	Beselt, 2021; Devereux-Fitzgerald, 2016; Dunston, 2022; McDonough, 2021; Sandlund, 2017
	Share ideas for strategies that can help people to meet physical activity goals or remain active.	FP, OE	Beselt, 2021
	Provide personalized recommendations about physical activity based on participants' interests, likes/dislikes, needs.	FP, OE	Beselt, 2021; Harvey, 2020; Hurley, 2018; Lu, 2023; McDonough, 2021
	Share information or exchange ideas; if similar experiences or adversities are shared, provide suggestions or information about treatment, coping, etc.	OE	Eynon, 2019; Hurley, 2018; Livsey, 2018; Lu, 2023; McDonough, 2021; Nelson, 2023; Tweed, 2021

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Encouragement	Give clear and repeated instructions (especially for populations with cognitive impairments).	FP	Beselt, 2021; Booth, 2019; Devereux-Fitzgerald, 2016; Hurley, 2018
	Refrain from overt messages pressuring participants to engage in physical activity.	FP	McDonough, 2021; Rato Barrio, 2021
	Challenge participants to try things they have the ability to accomplish through intentional, proactive, positive comments.	FP	Browall, 2018; De Lacy-Vawdon, 2018; Devereux-Fitzgerald, 2016; Harvey, 2020; McDonough, 2021; Rato Barrio, 2021
	Ask participants about their previous experience of physical activity and pay attention to their ability so you can tailor recommendations that set them up for success.	FP	Beselt, 2021; Booth, 2019; Chen, 2023; Dunston, 2022; Farrance, 2016; Harvey, 2020; Hurley, 2018; Price, 2023; Sandlund, 2017; Tweed, 2021
	Provide guidance on what to do and how to do it safely and effectively (e.g., use of equipment, technique), considering the specific needs and abilities of the participant.	FP	Beselt, 2021; Booth, 2019; Browall, 2018; Chen, 2023; De Lacy-Vawdon, 2018; Devereux-Fitzgerald, 2016; Dunston, 2022; Eynon, 2019; Harvey, 2020; Hurley, 2018; Koren, 2021; Livsey, 2018; Lu, 2023; McDonough, 2021; Price, 2023; Sandlund, 2017; Tweed, 2021
	Provide verbal encouragement prior to and during class.	FP, OE	Beselt, 2021; De Lacy-Vawdon, 2018; Eynon, 2019; Harvey, 2020; Hurley, 2018; Livsey, 2018; Lu, 2023; McDonough, 2021; Price, 2023
	Share success stories about similar others doing physical activity.	FP, OE	De Lacy-Vawdon, 2018; Eynon, 2019; Hurley, 2018
	Hugging, if appropriate, when participants have accomplishments.	FP, OE	Beselt, 2021; McDonough, 2021
Mastery feedback	Helping participants set measurable, individual and/or group physical activity goals focused on effort and improvement.	FP	McDonough, 2021; Sandlund, 2017
	Emphasizing the class is a non-competitive environment.	FP	McDonough, 2021; Sandlund, 2017
	Vocalizing positive, individualized feedback, praise, and reinforcement.	FP, OE	Beselt, 2021; Collado-Mateo, 2021; De Lacy-Vawdon, 2018; Devereux-Fitzgerald, 2016; Eynon, 2019; Farrance, 2016; Harvey, 2020; McDonough, 2021; Rato Barrio, 2021; Tweed, 2021

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Autonomy support	Ask about and listen to participants' goals, perspectives, and preferences; and tailor suggestions and reminders to align with their goals without being pressuring.	FP	Booth, 2019; Collado-Mateo, 2021; De Lacy-Vawdon, 2018; Farrance, 2016; McDonough, 2021; Rato Barrio, 2021
	Remind participants to listen to their body, set limits based on their abilities and how they are feeling.	FP	Browall, 2018; Devereux-Fitzgerald, 2016
	Provide meaningful choices and incorporate participant ideas and feedback.	FP	Eynon, 2019; McDonough, 2019; Rato Barrio, 2021
	Being patient and flexible.	FP	Eynon, 2019
	Make room for participants to contribute their skills and expertise (e.g., peer instructors).	FP	Harvey, 2020; Koren, 2021; Tweed, 2021
Emotional support	Serve as social coordinators and direct participants to appropriate support within or outside the group, (if applicable).	FP	Farrance, 2016; McDonough, 2021
	Encourage/do not discourage and allow space for support that occurs organically. Emphasize the value of shared learning, support, and experiences from one another.	FP	Browall, 2018; Hurley, 2018; McDonough, 2021; Price, 2023; Tweed, 2021
	Be sincere, understanding, non-judgmental, accepting, caring, empathetic, gentle, conscientious, kind, friendly, and respectful in communications with participants.	FP, OE	Beselt, 2021; Booth, 2019; Bradford, 2023; Browall, 2018; De Lacy-Vawdon, 2018; Eynon, 2019; Farrance, 2016; Harvey, 2020; Hurley, 2018; Livsey, 2018; Lu, 2023; Price, 2023
	Check in with participants who were absent or who are facing adversity, and let them know they were missed, are thought of, and are cared about, and encourage their return when able.	FP, OE	Beselt, 2021; Bradford, 2023; De Lacy-Vawdon, 2018; Farrance, 2016
	Express concern and compassion for participants' feelings.	FP, OE	Beselt, 2021; Rato Barrio, 2021
	Show understanding, empathy, and share own experiences when participants are facing adversity (e.g., diagnosis, a recent fall, etc.).	FP, OE	Booth, 2019; Bradford, 2023; Browall, 2018; Dunston, 2022; Eynon, 2019; Farrance, 2016; Hurley, 2018; Koren, 2021; Livsey, 2018; Lu, 2023; McDonough, 2021; Rato Barrio, 2021; Tweed, 2021

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	Use humour and break taboos about adversity (e.g., cancer); share dark humour and tell jokes that may be awkward in other settings.	OE	McDonough, 2021
Fostering social connections	Structure partners or small groups to be similar (interests, needs, functionality, demographics, etc.) and keep them together over time.	FP	Collado-Mateo, 2021; Farrance, 2016; McDonough, 2021; Sandlund, 2017
	Facilitate group discussions that invite all participants to be involved and help participants get to know each other.	FP	Lu, 2023; Tweed, 2021
	Provide opportunities before, after, or during formal activities for informal socializing.	FP	Beselt, 2021; De Lacy-Vawdon, 2018; Sandlund, 2017
	Encourage, suggest, assist with, and/or participate in social gatherings outside of the physical activity setting.	FP, OE	Beselt, 2021; Harvey, 2020; Sandlund, 2017; Tweed, 2021

734 FP = Fitness professionals; OE = Other exercisers