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Positive Youth Development in Aboriginal Physical Activity and Sport: A Systematic Review

Final Revisions Submitted: December 4, 2015

Date Resubmitted: November 26, 2015

Date Submitted: October 19, 2015

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Abstract

Physical activity and, more specifically, sport, can positively impact the body, mind, heart, and spirit of Aboriginal youth. Despite enthusiasm for these benefits, there is a paucity of published information reviewing the relationship between sport, and physical activity and Aboriginal youth development. The purpose of this systematic review was to provide an overview of research examining Aboriginal youth development in physical activity and sport settings. A review of literature was conducted up until July 2015 using 10 key databases and non-indexed Indigenous journals. Articles meeting the following criteria were retained: (a) involved an Indigenous population; (b) explored, either through empirical research or conceptualization, the notion of “positive youth development” and “physical activity”, “sport”, or “recreation”. Thirty-five articles out of the 10,039 documents identified met the inclusion criteria. Thematic analysis revealed that physical activity and sport provides many positive developmental opportunities for Aboriginal youth to thrive (e.g., to incorporate Indigenous values and traditional ways, to strengthen resiliency, to improve all aspects of health, and to promote culture and education), as well as possible negative developmental experiences (e.g., racism, bullying, and exclusion). To our knowledge, this article presents the first review of research examining Aboriginal youth development in sport and physical activity and highlights how the activity context can shape Aboriginal youth development.

42

43 *Keywords:* Indigenous, Aboriginal, Adolescence, Physical Activity, Youth Development, Health

44

Introduction

45 Participation in physical activity through purposeful movement of the body is associated
46 with a number of physical and psychosocial benefits (Côté and Fraser-Thomas 2011; Eccles et
47 al. 2003; Eime et al. 2013; Holt 2008). Over the past decade, there has been an increased focus
48 on understanding the psychosocial development of youth through sport and physical activity
49 engagement (Holt and Neely 2011; Taylor et al. 2015). Much of this research has drawn from
50 developmental systems theory (Lerner and Castellini 2002) and developmental psychology, and
51 has undertaken a positive youth development perspective (PYD). PYD is conceptualized as a
52 strength-based rather than deficit-based perspective of adolescent development that recognizes
53 that all young people hold the potential for positive, successful, and healthy development (Lerner
54 et al. 2005). This concept has been embraced by adults who work with youth (teachers, coaches)
55 and there is considerable empirical evidence to support the salient role of sport and physical
56 activity in fostering PYD (Eccles et al. 2003; Fredricks and Eccles 2006, 2008).

57 To date, there is a lack of published literature reporting on PYD programs specific to
58 Aboriginal youth populations (Kana'iaupuni 2005; Mayeda et al. 2001). We know little about
59 the relationship between sport and physical activity and Aboriginal (defined as persons in
60 Canada who identify as First Nations (FN), Inuit or Métis; Dussault 1996) youth development, or
61 about how sport and physical activity might be leveraged to address the historical adversity faced
62 by Aboriginal youth in Canada. This represents a significant gap in knowledge because the
63 legacy of several forms of colonization by European settlers in Canada has impacted the well-
64 being and development of Aboriginal youth in Canada (Gracey and King 2009). Aboriginal
65 youth development has been mortgaged by multigenerational gaps in the transmission of
66 Indigenous culture, language and identity (McShane et al. 2009; Truth and Reconciliation

67 Commission of Canada 2015). A comprehensive understanding of PYD among Aboriginal youth
68 must include historical and cultural perspectives. An emerging body of literature has highlighted
69 the benefits of physical activity, especially with organized sport and recreational opportunities,
70 for Aboriginal youth. For example, sport has been used to teach personal and social values such
71 as honesty, courage and respect and been reported to positively impact the body, mind, heart and
72 spirit of Aboriginal youth (Cargo et al. 2007; Lavallée and Lévesque 2013; Lockard 2000).
73 Further, sport has been advocated as a valuable medium for holistic development in realms
74 extending beyond sport (Blodgett et al. 2008). Through participation in sport, Aboriginal athletes
75 have reported greater preparation and support in their pursuit of ambitions (Blodgett et al. 2008).
76 More broadly, physical activity has also been identified as having the potential to reduce self-
77 harm, levels of substance abuse and improve social cohesion in Indigenous communities
78 (Cunningham and Beneforti 2005).

79 Despite these benefits, Aboriginal youth have also reported some negative experiences
80 associated with physical activity and sport participation. For example, a study by Blodgett and
81 colleagues (2008) investigating the sport experience of elite Aboriginal athletes revealed
82 systematic racism faced by young Aboriginal athletes. Other studies have indicated that the
83 participation of Aboriginal youth in sport has often led to animalistic portrayals of these athletes
84 (Bloom 1996). The identified negative experiences alongside others noted among Euro-
85 American populations (e.g., stress, anxiety, burnout; Wiersma 2000) highlight the importance of
86 considering both positive and negative outcomes associated with Aboriginal youth sport and
87 physical activity participation.

88 **Current Study**

112 “Indians of North America” OR “Pacific Islander” OR “Alaskan Native” AND contexts “Sport”
113 or “Recreation” or “Physical Activity”, while using the following combinations of topic terms,
114 “Positive youth development” OR “Leadership” OR “Athlete development” OR “Prosocial” OR
115 “Life skills” (development) OR “Sport outcomes” OR “Psychosocial development” OR
116 “resiliency” OR “empowerment” in the article title, identified keywords, or abstract. Given the
117 breadth of the topic and the diverse terminology used to describe this population, it was
118 important that this literature search use an array of encompassing population search terms that
119 focused on a variety of Aboriginal identities from around the world [i.e., in a Canadian context
120 (“Aboriginal“, “First Nations“, “Métis“, “Inuit“), an American context (“Native American““
121 Indian“, “Pacific Islander“), and terms used internationally (“Indigenous“)]. The initial search
122 was conducted in July - September, 2012 and updated in July 2015 examining all published
123 literature until this date using 10 databases: (a) Academic Search Premier, (b) Education
124 Research Complete, (c) ERIC, (d) MedLine, (e) SportDiscus (f) ProQuest Dissertations and
125 Thesis (g) ProQuest Nursing & Allied Health Source, (h) ProQuest Sociology, (i) PsychINFO, (j)
126 Canadian Research Index.

127 **Phase 2 - Indigenous Peer-Reviewed Journal Search**

128 Phase 2 of the review constituted a further pursuit of peer-reviewed articles in Indigenous
129 journals that were not indexed in Phase 1 databases. Many of the academic indices do not
130 include Indigenous specific journals. As such, a list of non-indexed Indigenous peer reviewed
131 journals was compiled (Table 2). Twenty-two additional peer-reviewed journals were identified
132 from this source. Three more journals were identified by research team members, yielding a total
133 of 25 journals in this phase. The 25 journals were then examined using the same search terms
134 and inclusion criteria outlined in Phase 1. The initial search was conducted in October-December

135 2012 and updated in July, 2015. Material published in the journals since inception were included
136 in the search.

137 **Phase 3 - Grey Literature Search**

138 Phase 3 of the review consisted of grey literature searches and personal correspondence
139 with experts in Aboriginal youth development. Phase 3 began in December of 2012 and was
140 updated in July 2015 with a search for non-peer reviewed journal articles, periodicals,
141 government documents, and websites using the search terms in Phase 1 and 2 through Google.
142 The Google search was limited to the first four pages of results as per established protocols
143 reflecting typical patterns of viewing Google results (Jansen and Spink 2006; Jetha et al. 2011)
144 Indigenous agency and organization documents, and documents identified by research team
145 members (i.e., who knew of specific organizations and communities doing work in the area of
146 Aboriginal youth development and/or Aboriginal sport) were also collected. As a part of the
147 validation process for Phase 3, two experts in Aboriginal youth development independently
148 reviewed the list of articles and websites identified by the research team. Once articles in all
149 three Phases had been retrieved using the population and topic terms outlined above, abstracts of
150 articles were read to determine if some inclusion criteria were met. Articles containing abstracts
151 that met at least some of the inclusion criteria were then read in their entirety and subjected to a
152 full content review; articles containing all of the inclusion criteria were retained for analysis.

153 **Article Analysis**

154 The articles retained in all three Phases were classified by methodology (i.e., quantitative,
155 qualitative, or mixed method), and independently coded according to themes identified within
156 them that positively and negatively affect youth development in an Indigenous population by two
157 coders using NVivo 10 software. Following the recommendations of Braun and Clarke (2006), a

158 six-phase method of identifying, analyzing and reporting themes within the data was used: (1)
159 familiarizing oneself with the articles, (2) generating initial codes, (3) searching for youth
160 development themes in the articles, (4) reviewing themes with the other coder, (5) defining and
161 counting themes, and (6) producing the findings for the manuscript. Any discrepancies in the
162 coding of the articles were resolved through discussion between the two coders and another
163 author. Consensus was obtained for all articles coded.

164 **Results**

165 Initially, using the keywords and aforementioned study search criteria, 10,039 documents
166 were identified for this systematic review. Figure 1 presents the Stages of article selection
167 identification and Table 1 provides a description of the 35 articles retained for coding. The
168 majority of the articles used a qualitative approach ($n=15$) (Blodgett et al. 2008; Bloom 1996;
169 Brown 2015; Brown and Kraft 2008; Cunningham and Beneforti 2005; Donahue 1997; Keith
170 1999; Marchand 2001; McHugh et al. 2013a; McHugh et al. 2013b; Nicholls and Giles 2007;
171 Richie et al. 2010; Skinner et al. 2006; Tighe and McKay 2012; Young et al. 2013) and reported
172 research from Canada ($n=20$) (Blodgett et al. 2008; Critchley 2006; Government of Ontario
173 2010; Government of Saskatchewan 2008; Indigenous Wellness Group and Lavallée 2013;
174 Lankford and Neal 1998; Lankford et al. 2010; Lavallée et al. 2009; Marchand 2011; McHugh et
175 al. 2013a; McHugh et al. 2013b; Navara et al. 2009; Nicholls and Giles 2007; Praxis Consulting
176 2014; Right to Play 2015; Ritchie et al. 2010; Skinner et al. 2006; World Leisure Professional
177 Services 2000, 2002; Young et al 2013). Ten of the reviewed articles described PYD
178 interventions or programs (Brown and Kraft 2008; Donovan et al. 2015; Indigenous Wellness
179 Group and Lavallée 2013; Government of Ontario 2010; Kiran and Knights, 2010; Navara et al.
180 2009; Right to Play 2015; Teufel and Ritenbaugh 1998; Tighe and McKay 2012; Weaver and
181 Jackson 2010). When specified, the age of youth participants did not exceed 21 years. The most

182 prevalent themes throughout the 35 articles were *Empowerment* ($n=29$) (Blodgett et al 2008;
183 Bloom 1996; Brown and Kraft 2008; Cunningham and Beneforti 2005; Donahue 1997; Donovan
184 et al. 2015; Feinstein et al. 2009; Government of Ontario 2010; Government of Saskatchewan
185 2008; Indigenous Wellness Group and Lavallée 2013; Keith 1999; Kiran and Knights 2010;
186 Lankford and Neal 1998; Lankford et al. 2010; Lavallée et al. 2009; Marchand 2011; McHugh et
187 al. 2013a; McHugh et al 2013b; Navara et al. 2009; Nicholls and Giles 2007; Praxis Consulting
188 2014; Right to Play 2015; Ritchie et al. 2010; Simmonds 2014; Skinner et al. 2006; Teufel and
189 Ritenbaugh 1998; Tighe and McKay 2012; World Leisure Professional Services 2000, 2002),
190 *Overall Health and Fitness* ($n=23$) (Brown and Kraft 2008; Critchley 2006; Cunningham and
191 Beneforti 2005; Government of Ontario 2010; Government of Saskatchewan 2008; Gray and
192 Smith 2003; Indigenous Wellness Group and Lavallée 2013; Keith 1999; Lankford and Neal
193 1998; Lankford et al. 2010; Lavallée et al. 2009; McHugh et al. 2013a; McHugh et al. 2013b;
194 Navara et al. 2009; Nicholls and Giles 2007; Praxis Consulting 2014; Simmonds 2014; Skinner
195 et al. 2006; Teufel and Ritenbaugh 1998; Weaver and Jackson 2010; World Leisure Professional
196 Services 2000, 2002; Young et al 2013), and *Traditional Culture and Values* ($n=22$) (Blodgett et
197 al. 2008; Bloom 1996; Donahue 1997; Donovan et al. 2015; Feinstein et al. 2009; Government of
198 Saskatchewan 2008; Indigenous Wellness Group and Lavallée 2013; Keith 1999; Kiran and
199 Knights 2010; Lankford and Neal 1998; Lankford et al. 2010; Lavallée et al. 2009; Marchand
200 2011; McHugh et al. 2013a; McHugh et al. 2013b; Praxis Consulting 2014; Ritchie et al. 2010;
201 Simmonds 2014; Weaver and Jackson 2010; World Leisure Professional Services 2000, 2002;
202 Young et al. 2013).

203 Less prevalent themes included *Resiliency and Mental Health* ($n=16$) (Brown 2015;
204 Cunningham and Beneforti 2005; Donovan et al. 2015; Feinstein et al. 2009; Indigenous

205 Wellness Group and Lavallée 2013; Lankford and Neal 1998; Lankford et al. 2013; Lavallée et
206 al. 2009; Moilanen 2014; Narava et al. 2009; Praxis Consulting 2014; Ritchie et al. 2010,
207 Simmonds 2014; Tighe and McKay 2012; World Leisure Professional Services 2000, 2002),
208 *Education* (n=12) (Critchley 2006; Cunningham and Beneforti 2005; Feinstein et al. 2009; Kiran
209 and Knights 2010; Lavallée et al 2009; Nicholls and Giles 2007; Praxis Consulting 2014;
210 Simmonds 2014; Skinner et al. 2006; Teufel and Ritenbaugh 1998; Tighe and McKay 2012;
211 Weaver and Jackson 2010), *Barriers* (n=10) (Blodgetts et al. 2008; Brown and Kraft 2008;
212 Government of Saskatchewan 2008; Gray and Smith 2003; Keith 1999; McHugh et al. 2013a;
213 McHugh et al. 2013b; Navara et al. 2009; Ritchie et al 2010; Skinner et al. 2006), and *Negative*
214 *Outcomes* (n=3) (Blodgett et al. 2008; Bloom 1996; McHugh et al. 2013a).

215 **Phase 1 – Indexed Peer-Reviewed Literature**

216 As shown in Figure 1, a search of the 10 databases yielded 17 articles that were retained
217 in Phase 1. One hundred and forty-one articles were excluded as they did not meet the search
218 criteria - either did not focus on youth development (e.g., only mentioned youth development
219 briefly in the discussion section of the article), or did not focus on Indigenous peoples) (see
220 Figure 1; Table 1).

221 **Phase 2: Indigenous Peer-Reviewed Journal Search**

222 A search of the non-indexed Indigenous literature yielded six articles that were retained
223 in Phase 2. Seventeen articles were excluded as they either did not focus on youth development
224 (e.g., only mentioned youth development briefly in the discussion section of the article), or did
225 not focus on Indigenous peoples (see Figure 1; Table 1).

226 **Phase 3 - Grey Literature**

227 Two experts in Aboriginal youth development independently reviewed a total of 88

228 websites and nine articles identified as relevant by the research team to determine if any others
229 sources had been missed or warranted inclusion. The experts and a member of the research team
230 identified a total of 11 additional organization websites. A search of the suggested websites
231 yielded nine additional articles, bringing the total to 18 articles. After full screening of the 18
232 identified youth development articles against the study criteria and upon determining if youth
233 development was a major focus of the article, 12 articles were retained in Phase 3. Six articles
234 were excluded as they did not focus on youth development or did not focus on Indigenous
235 peoples (see Figure 1; Table 1).

236 **Thematic Coding of Included Articles**

237 Using NVivo 10 software, two coders reviewed the 35 articles retained from all three
238 phases, coding them for themes related to positive youth development in an Indigenous
239 population. Seven themes were identified from the literature: (1) *Empowerment*, (2) *Overall*
240 *Health and Fitness*, (3) *Traditional Culture and Values*, (4) *Education*, (5) *Barriers to*
241 *Participation*, (6) *Resiliency and Mental Health*, and (7) *Negative Physical Activity and Sport*
242 *Experiences*. Each theme, with associated examples, is described below.

243 *Empowerment*. This theme highlighted Aboriginal youth development leadership skills,
244 overcoming barriers, and building self-worth. For example, Brown and Kraft (2008) documented
245 Celebrate Fitness, a program that provided funding for Native American teens to develop and
246 conduct grassroots initiatives under the supervision of Native American adults. Skinner and
247 colleagues (2006) also discussed how, in a remote, sub-arctic First Nations community, the
248 barriers and supports for nutrition and physical activity are heightened and interrelated, thus
249 contributing to much larger social constructs such as empowerment and trust. Skinner and
250 colleagues (2006) also mentioned that empowerment should be incorporated into the design of

251 public health initiatives as it is a key issue for many Aboriginal communities in Canada. As
252 another example of empowerment, the planning committee for the Alberta Indigenous Games, as
253 discussed by Marchand (2011) recognized the value and potential that practicing Indigenous
254 cultures has on Aboriginal youth. The focal point of the Alberta Indigenous Games was the
255 implementation of the Circle of Courage values, which identified Indigenous traditions that
256 foster social harmony and extraordinary personal achievement. The Circle of Courage values
257 were incorporated into the Games' activities such as sports, music and dance. This philosophy
258 promoted an environment of encouragement, empowerment and acceptance for all. In the Arctic
259 Games reports (Lankford and Neal 1998; Lankford et al. 2010; World Leisure Professional
260 Services 2000, 2002), participants indicated that the experience was fun, provided positive
261 experiences including new friendships and ultimately led to the development of leadership skills.

262 *Overall Health and Fitness.* This theme highlighted the improvement of Aboriginal
263 youth's physical health (e.g., reduction in diabetes), through becoming active and avoiding
264 health-damaging behaviors such as tobacco use. As an example, the Zuni Diabetes Prevention
265 Program is a community-based primary prevention project designed to reduce the prevalence of
266 diabetes risk factors among high school-aged youth (Teufel and Ritenbaugh 1998). Brown and
267 Kraft (2008) also discussed this theme as they described how empowerment of youth leaders is
268 proving to be an effective approach to improving health and fitness as it reduces tobacco use as
269 well as gun violence. Another example of this theme was presented in Weaver and Jackson's
270 (2010) work, which outlined "Healthy Living in Two Worlds", a project developed to increase
271 physical activity and healthy eating practices while also decreasing or preventing recreational
272 tobacco use in urban, Northeastern Native American youth. In evaluating a running program
273 with First Nations youth, the Indigenous Wellness Group and Lavallée (2013) noted that youth

274 participants improved their physical health along with positive impacts on spiritual, emotional
275 and mental health.

276 *Traditional Culture and Values.* This theme highlighted youth learning about Aboriginal
277 culture and heritage such as language, music, dance, and traditions. As an example, Kiran and
278 Knights (2010) documented the importance of implementing culturally relevant programs in
279 primary schools. The use of a Traditional Indigenous Games program increased retention rates of
280 Indigenous students in schools as well as raised awareness of culture, and improved cultural
281 pride (Kiran and Knights 2010). This theme can also be seen in the work of McHugh and
282 colleagues (2013a) as the authors discussed the importance of sharing circles in the context of
283 physical activity and the sacred meaning they have for many Indigenous cultures. The work of
284 Young et al. (2013) utilized this theme as their physical activity research was guided by the
285 Medicine Wheel, a culturally relevant model of health and well-being where each quadrant
286 represents a domain of health: spiritual, emotional, physical and mental. Culture and the
287 importance of traditional territories, was also integral for connecting with ancestors and
288 experiencing personal growth as part of the Future Generations Ride horse program (Brown
289 2015). Lavallée et al. (2009) and Praxis Consulting (2014) conducted research on the 2008 and
290 2014 North American Indigenous Games respectively and found that sport that incorporates
291 cultural activities and protocols increased cultural pride, awareness and made youth feel more
292 comfortable in the sporting environment.

293 *Resiliency and Mental Health.* This theme highlighted suicide prevention, as well as
294 overcoming addictions and depression. As an example, the work of Cunningham and Beneforti
295 (2005) highlighted how sport and recreation has the potential to reduce self-harm and substance
296 use among Aboriginal youth. Further, the article by Feinstein and colleagues (2009) focused on

297 the importance of opportunities for education and involvement in extra-curricular activities as
298 being essential to Native American teenage resiliency. This theme was also present in the work
299 of Ritchie and colleagues (2010) which recommended mental health promotion strategies
300 developed through a community-driven approach to build Aboriginal youth resilience and
301 cultural identity to prevent suicide. Another example of this theme can be seen through
302 discussion of the project Alive and Kicking Goals! (AKG), a positively-framed suicide
303 prevention peer education project that attempts to improve the provision of mental health
304 services available for at-risk youth in the Kimberly region of Australia (Tighe and McKay 2012).

305 *Education.* This theme highlighted the importance of continuing education for Aboriginal
306 youth, of succeeding in school, and of learning that occurs in programs outside of school. For
307 example, the work of Kiran and Knights (2010) highlighted the protective role an Aboriginal
308 child's sense of connectedness to school plays in preventing problematic behaviors and
309 disengagement with education. Critchley and colleagues (2006) discussed the importance of
310 physical education programs both during and after school hours as these physical activities may
311 play a significant role in improving Aboriginal students' attitudes, discipline and behaviors.

312 *Barriers to Participation.* This theme highlighted the many real or perceived obstacles
313 that Aboriginal youth struggle with in regard to being physically active. As an example, Skinner
314 and colleagues (2006) discussed the heightened barriers to healthy living in remote communities
315 where access to physical activity opportunities can be limited. The increased barriers may be due
316 to a lack of capacity and support at the community level. Another example of a barrier to
317 participation in physical activity can be seen in Gray and Smith's (2003) work as they cited
318 neighborhood safety as a major concern for the Aboriginal youth who live in low-income, high-
319 crime areas. In these particular situations, watching television or taking part in other sedentary

320 activities may offer a safe environment as well as relief for the parents (Gray and Smith 2003).
321 The Government of Saskatchewan (2008) highlighted the four most frequently cited barriers to
322 being physically active for Aboriginal children as lack of time, cost of participation, lack of local
323 programs and lack of transportation.

324 *Negative Physical Activity and Sport Experience.* This theme encompassed any negative
325 experiences for Aboriginal youth as a result of physical activity participation. Several examples
326 included racism, bullying, and exclusion. In the work of Blodgett et al. (2008), an Aboriginal
327 elite athlete discussed the racism experienced during sport participation; “When people know
328 you’re native they’re going to say something to you. Those are the times you’ve got to prepare
329 for. You’re not going to fold your tent and go home.” Bloom (1996) highlighted the themes of
330 negative sport and physical activity outcomes by drawing on the earlier work of Churchill et al.
331 (1979) who argued that although Indian school athletes were successful, the media images did
332 little for Native Americans themselves other than promote a vision of animalistic, racially
333 defined, purely physical beings.

334 **Discussion**

335 The period of adolescence has traditionally been framed as one of risk rather than one of
336 opportunity (Takanishi 1993; Jessor 1998; Wolfe et al. 2006). The prevailing paradigm shift
337 toward a PYD perspective now casts youth as resources to be developed rather than problems to
338 be solved (Damon 2004). Childhood and adolescence are considered opportunities for growth in
339 which youth can gain competencies to earn a living, gain knowledge of themselves and their
340 place in society, learn to nurture others, and engage in civic activities (Hamilton et al. 2004;
341 Jones and Lavallee 2009). The goal of optimal youth development is to “enable individuals to
342 live health, satisfying, and productive lives as youth and later as adults” (Hamilton et al. 2004, p.

343 3). This goal is particularly meaningful for Aboriginal youth who have been disadvantaged by
344 the legacy of historic trauma (Aguilar and Halseth 2015). Using this PYD perspective,
345 developmental researchers have reported many positive and some negative outcomes associated
346 with sport and physical activity engagement (Holt and Neely 2011).

347 The purpose of this review was to provide a systematic review of the research examining
348 Aboriginal youth development in physical activity and sport settings. An analysis of the articles
349 revealed a diversity of themes highlighting how physical activity, especially through sport and
350 recreational opportunities, can shape Aboriginal youth development. With a focus on
351 empowerment, well-being, as well as traditional culture and values, this review illustrates a shift
352 from deficit-reduction approaches that have disempowered youth by labelling behavior as
353 problematic and in need of being “fixed” (Kana’iaupuni 2005; Mayeda et al. 2001). Applied to
354 physical activity and sport, this positive conceptualization may help facilitate the promotion of
355 Indigenous values and the use of local community expertise in program design. For example, the
356 Canoe Journey curriculum developed by Donovan and colleagues (2015) utilized community
357 members in developing culturally-grounded programming that is preferred, and often more
358 effective, than conventional programs based on mainstream values (Lowe 2012; Lowe et al.
359 2011). As a result, the findings and literature identified provide program developers and
360 practitioners with examples of physical activity and sport that successfully promote Aboriginal
361 youth development in the field and that highlight the importance of culturally meaningful
362 opportunities. For example, the programs outlined in the grey literature illustrate how physical
363 activity and sport programs can be translated to a community context with positive outcomes
364 (Brown 2015; Government of Ontario 2010; Government of Saskatchewan 2008; Lavallée et al.
365 2009; Navara et al. 2009; Praxis Consulting 2014; Right to Play 2015). The implementation of a

366 multi-phased systematic approach encompassing both academic and grey literature provided a
367 deeper understanding of the role of physical activity and sport on Aboriginal youth development.

368 Despite the novelty of our review, it is important to acknowledge the limitations of the
369 evidence and of the review. Although the search strategy was comprehensive and included grey
370 literature, conference proceedings or articles written in languages other than English or French
371 were not included. In addition, the review did not distinguish between the findings from
372 observation and intervention studies. We recognize that Indigenous communities conduct
373 research and evaluation and that this review of literature does not include grey literature that is
374 not available via the Internet or is unable to be found via our search methods. Finally, we
375 recognize the limitation of language or terminology and how programs that might focus on what
376 we understand to be positive youth development could be conceptualized quite differently in
377 Aboriginal communities. However, the articles included in the review were diverse and used a
378 range of methodological approaches and indicators of youth development through physical
379 activity and sport. Further, the self-reported nature of measures and/or cross-sectional designs
380 used in these studies, warrant that the findings be interpreted with caution.

381 **Conclusion**

382 To our knowledge, this study represents the first review of the Aboriginal physical
383 activity and sport literature pertaining to positive youth development. This review furthers our
384 understanding of the relationship that physical activity and sport has with Aboriginal youth
385 development. This systematic review also highlights several important recommendations for
386 future research (Grant and Booth 2009). In addition to a need for further qualitative research to
387 deepen the conceptual understanding of Aboriginal youth development through physical activity
388 and sport, there appears to be a need for greater evaluation of Aboriginal physical activity and

389 sport programs. The lack of research in this area may be related to the limited availability of
390 validated measures of Aboriginal youth development through physical activity and sport and an
391 absence of published evidence reporting on the internal and external validity of Aboriginal
392 physical activity sport interventions for enhancing PYD. Future research addressing these areas
393 will enhance our knowledge of how sport and physical activity settings can shape Aboriginal
394 youth development.

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Table 1: Articles Investigating Aboriginal Youth Development through Sport and Physical Activity

Phase	First Author	Year	Title	Journal Name	Methods Classification (Intervention Study)	Youth Age Range (when specified)	Themes Present
1	Blodgett, A.	2008	From Practice to Praxis Community-Based Strategies for Aboriginal Youth Sport	<i>Journal of Sport & Social Issues</i>	Qualitative	N/A	T,E,N, B
1	Brown, L	2008	Active Living as an Institutional Challenge: Lessons from the Robert Wood Johnson Foundation's "Celebrate Fitness" Program	<i>Journal of Health Politics, Policy, and Law</i>	Qualitative (Intervention)	N/A	HF,E,B
1	Cunningham , J	2005	Investigating Indicators for Measuring the Health and Social impact of Sport and Recreation Programs in Australian Indigenous Communities	<i>International Review for the Sociology of Sport</i>	Qualitative	N/A	R,HF,E D
1	Donovan, D.	2015	Healing of the Canoe: Preliminary Results of a Culturally Grounded Intervention to Prevent Substance Abuse and Promote Tribal Identity for Native Youth in Two Pacific Northwest Tribe	<i>American Indian and Alaskan Native Mental Health Research</i>	Quantitative (Intervention)	Grades 9- 12	T, R, E
1	Feinstein, S	2009	Resiliency and Native American Teenagers	<i>Reclaiming Children and Youth</i>	Mixed Methods	Grades 9- 12	T,R,ED

1	Gray, A	2003	Fitness, dietary intake, and body mass index in urban Native American youth	<i>Journal of the American Dietetic Association</i>	Quantitative	5-18 Years	HF,B
1	Keith, S	1999	Native American women in sport	<i>Journal of Physical Education, Recreation & Dance</i>	Qualitative	N/A	T,HF,E ,B
1	Kiran, A	2010	Traditional Indigenous Games promoting physical activity and cultural connectedness in primary schools – Cluster Randomised Control Trial	<i>Health Promotion Journal of Australia</i>	Quantitative (Intervention)	9-12 Years	T,ED
1	Marchand, D	2011	Circle of Courage Infusion into the Alberta Indigenous Games 2011	<i>Reclaiming Children and Youth</i>	Qualitative	N/A	T,E
1	McHugh, T.	2013	An Exploration of the Meanings of Sport to Urban Aboriginal Youth	<i>Qualitative Research in Sport, Exercise and Health</i>	Qualitative	12-15 Years	T,HF,E ,N,B
1	Moilanen, K.	2014	Extracurricular Activity Availability and Participation and Substance Use Among American Indian Adolescents	<i>Journal of Youth and Adolescence</i>	Quantitative	12-19 Years	R
1	Ritchie, S	2010	Developing a Culturally Relevant Outdoor Leadership Training Program for Aboriginal Youth	<i>Journal of Experiential Education</i>	Qualitative	N/A	T,R,E, B
1	Skinner, K	2005	Barriers and Supports for Healthy Eating and Physical Activity for First Nation Youths	<i>International Journal of Circumpolar Health</i>	Qualitative	Grades 6-8	HF,ED, E,B

			in Northern Canada				
1	Teufel, N	1998	Development of a Primary Prevention Program: Insight Gained in the Zuni Diabetes Prevention Program	<i>Clinical Pediatrics</i>	Quantitative (Intervention)	13.2-21.2 Years	HF,ED
1	Tighe, J	2012	Alive and Kicking Goals: Preliminary Findings from a Kimberly Suicide Prevention Program	<i>Advances in Mental Health</i>	Qualitative (Intervention)	N/A	R, ED, E
1	Weaver, H	2010	Healthy Living in Two Worlds: Testing a Wellness Curriculum for Urban Native Youth	<i>Child Adolescence and Social Work Journal</i>	Quantitative (Intervention)	9-13 Years	T,HF,ED
1	Young, N.	2013	A Process for Creating the Aboriginal Children's Health and Well-Being Measure (ACHWM)	<i>Canadian Journal of Public Health</i>	Qualitative	8.2-17.7 Years	T,HF
2	Bloom, J.	1996	"Show what an Indian can do": sports, memory, ethnic identity at federal Indian boarding schools	<i>Journal of American Indian Education</i>	Qualitative	N/A	T,E,N
2	Critchley, K.A.	2006	Personal Health Practices Around Physical Activity as Perceived by the Aboriginal Children of Prince Edward Island	<i>Journal of Aboriginal Health</i>	Mixed Methods	6 -18 Years	HF,ED
2	Donahue, P	1997	New warriors, new legends: basketball in three Native American works of fiction	<i>American Indian Research and Culture Journal</i>	Qualitative	N/A	T,E

2	McHugh, T.	2013	Enhancing the Relevance of Physical Activity Research by Engaging Aboriginal Peoples in the Research Process	<i>Pimatisiwin</i>	Qualitative	14-18 Years	T, HF, E, B
2	Nicholls, S.	2007	Sport as a tool for HIV/AIDS education: a potential catalyst for change	<i>Pimatisiwin</i>	Qualitative	N/A	HF, ED, E
2	Simmonds, H.	2014	Te Kete Whanaketanga - Rangatahi	<i>MAI Review</i>	Mixed Methods	12-18 Years	T, HF, ED, E
3	Brown, D.	2015	Ride for Future Generations	<i>Native Peoples Magazine</i>	Qualitative	N/A	R
3	Indigenous Wellness Group, Lavallée, L.	2013	Six Nations/Ohsweken Running Club Pilot Program Final Report		Quantitative (Intervention)	9-14 Years	T, R, HF, E
3	Government of Saskatchewan	2008	Saskatchewan Children and Youth Participation in Sport, Recreation and Cultural Activities		Mixed Methods	5-19 Years	T, HF, E, B
3	Government of Ontario	2010	Helping Improve Quality Of Life For Aboriginal Youth		Mixed Methods (Intervention)	N/A	HF, E
3	Lavallée, L.	2009	Health and Social Impacts and Fitness Testing at the 2008 North American Indigenous Games		Quantitative	N/A	T, R, HF, E, ED
3	Navara, G.	2009	CARA Program Evaluation- Nipissing First Nation		Mixed Methods (Intervention)	N/A	R, HF, E, B

3	Praxis Consulting	2014	2014 North American Indigenous Games Evaluation Report		Mixed Methods	N/A	T, R, HF, E, ED
3	Right to Play	2015	PLAY Program		Quantitative (Intervention)	N/A	E
3	World Leisure & Recreation Association Professional Services (WPS)	1998	The 1998 Arctic Winter Games: A Study of the Benefits of Participation		Mixed Methods	N/A	T,R, HF, E
3	World Leisure Professional Services (WPS)	2000	2000 Arctic Winter Games Whitehorse: Personal and Social Benefits of Participation		Quantitative	N/A	T,R, HF, E
3	World Leisure Professional Services (WPS)	2002	2002 Arctic Winter Games: Nuuk, Greenland and Iqaluit, Canada Personal and Social Benefits of Participation		Mixed Methods	N/A	T,R, HF, E
3	World Leisure Professional Services (WPS)	2010	2010 Arctic Winter Games: Personal, Social, and Community Benefits of Participation		Quantitative	N/A	T,R, HF, E

**Note: T=Tradition, R= Resiliency, HF= Overall Health and Fitness, ED= Education, E=Empowerment, N=Negative Outcomes, B=Barriers*

Table 2: Non-Indexed Indigenous Journals searched during Phase 2

Journal Name	Inaugural Publication Year
AlterNative: An International Journal of Indigenous Scholarship	2005
Australian Indigenous Law Review	1996
American Indian Culture and Research Journal	1974
BC Studies: The British Columbian Quarterly	1969
Cultural Survival Quarterly	1972
Decolonization: Indigeneity, Education and Society	2012
First Peoples Child & Family Review	2004
International Journal of Circumpolar Health	1972
Journal of Aboriginal Health	2004
Journal of Ethnopharmacology	1979
Indigenous Policy Journal	1989
Indigenous Law Journal	2002
International Journal of Critical Indigenous Studies	2008
International Indigenous Policy Journal	2010
Journal of Indigenous Research	2011
MAI Review	2006

Native Social Work Journal	1997
Native South	2008
Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health	2003
Plains Anthropologist	1955
Settler Colonial Studies	2011
Tribal Law Journal	1998
Te Kaharoa	2008
UCLA's Indigenous Peoples Journal of Law, Culture & Resistance	2004
Wicazo Sa Review	1985

Table 3: Systematic Review Search Strategy

Phase	Content	Database(s)	Key Terms	Inclusion Criteria
1	Indexed Peer-Reviewed Journals	1. Academic Search Premier; 2. Education Research Complete; 3. ERIC; 4. MedLine; 5. SportDiscus; 6. ProQuest Dissertations and Thesis; 7. ProQuest Nursing & Allied Health Source; 8. ProQuest Sociology; 9. PsychINFO; 10. Canadian Research Index.	(“Aboriginal”, OR “First Nations”, OR “Métis”, OR “Inuit”, OR “American Indian”, OR “Indian” [omitting Indian from India], OR “Native American”, OR “Indigenous” OR “Indians of North America” OR “Pacific Islander” OR “Alaskan Native”) AND (“sport” or “recreation” or “physical activity”) AND (“positive youth development” OR “leadership” OR “athlete development” OR “prosocial” OR “life skills [development]” OR “sport outcomes” OR “psychosocial development” OR “resiliency” OR “empowerment”)	(a) Involved an Indigenous population; (b) Explored, either through empirical research or conceptualization, the notion of ‘positive youth development’; (c) Specific to the sport or physical activity domain; (d) peer-reviewed article; (e) English or French language.
2	Non-Indexed Peer-Reviewed Indigenous Journals	Table 2		
3	Non Peer-Reviewed Grey Literature	Google Search		Same as above, excluding (d).