

A comparison of health-related quality of life in rural and metropolitan areas of Australia: the contribution of sports and physical activity

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Introduction

People can be physically active in their leisure time in many different ways, ranging from organised sports such as football and tennis to informal physical activity (PA) such as walking. In addition to the physical health benefits of participation, there is increasing evidence of broader health benefits (HR quality of life) of participation in organised community-level sports, specifically social and mental health benefits (Eime et al., 2013a, 2013b; Vella et al., 2015; Jenkin et al., 2018). Some of these benefits are unique to sports, given the team- and club-based, social nature of participation (Eime et al., 2013a, 2013b). Further, the specific health benefits of participation in community-level sports can differ across the lifespan (Vella et al., 2015; Jenkin et al., 2018; Mayolas-Pi et al., 2021).

Also, there are different patterns of participation in sports and physical activity among metropolitan residents compared to residents in non-metropolitan (in Australia generally termed ‘rural and regional’) areas (Eime, Charity et al., 2015). Participation in club-based community sports is often more prevalent among people living in rural and regional areas compared to metropolitan areas (Eime et al., 2016). Sports, in that regard, seems to play a particularly important role in regional Australia as a space for collective action around social and physical benefits that are delivered through participation in sports. This is further confirmed by various researchers (Spaaij, 2009; Tonts & Atherley, 2010; Mooney et al., 2012), who highlight the centrality of community sports in these areas.

There are many physical, social and mental health benefits of participation in regular leisure-time physical activity. Participation in regular physical activity can play a positive role in preventing the development of a range of chronic diseases (e.g. cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis) and premature death (Warburton et al., 2006).

Being physically active with others can also improve social health (Eime et al., 2013a, 2013b; Howie et al., 2020). These social benefits can be related to a number of different social interactions and relationships involving parents, siblings, extended family, friends, teammates and other peers (Eime et al., 2013a, 2013b; Howie et al., 2020). Further, there is evidence that greater social support for older adults to be physically active increases their likelihood of being active, especially when that social support comes from family members (Lindsay Smith et al., 2017). Being a member of community groups that offer both social and physical activities can also improve social well-being of older adults (Lindsay-Smith et al., 2018). It can be argued that in the wider context of society at large, the not-for-profit sports sector continues to be an important civil society actor. Sporting clubs are hubs for community connection, and sports governing bodies plan for and (can) initiate programmes that benefit communities at large.

Physical activity can help to promote mental health and well-being, as well as being helpful to the prevention and treatment of common mental health issues like depression and anxiety, and can reduce stress and distress (Saxena et al., 2005; Eime et al., 2013a, 2013b).

There is research evidence that health benefits can differ according to the type of activity undertaken. Specifically, leisure-time physical activity is associated with improved mental health compared to other domains like work-related physical activity (White et al., 2017). It has also been suggested that choice of activity and having fun is a contributing factor to improved health (Eime et al., 2013a). In particular, participation in sports has been shown to contribute considerably to overall leisure-time physical activity at health-enhancing levels (Eime, Harvey et al., 2015). In the present study, we consider two contextual dimensions of sports and leisure-time physical activity: *setting* (organised versus informal); and *mode* (team versus individual).

The health benefits of participation in sports also vary across different age groups (Eime et al., 2013a, 2013b; Jenkin et al., 2017; Vella et al., 2017; Bedard et al., 2020; Harlow et al., 2020; Kim et al., 2020; Panza et al., 2020). The following sections summarise literature on the specific health benefits of participation in sports, for children, adolescents, adults and older adults.

Health benefits of participation in sports for children and adolescents

For young children, participation in sports can be associated with the development of a range of personal, social, mental and physical skills and health benefits, many of which are expressed in what is known as Positive Youth

Development (Eime et al., 2013b; Neely & Holt, 2014; Holt et al., 2017; Bedard et al., 2020; Harlow et al., 2020). A systematic review of the psychological and social benefits of participation in sports for children and adolescents demonstrated a long list of potential benefits and highlighted that the main benefits were improved self-esteem, greater social interaction and fewer depressive symptoms (Eime et al., 2013b). Other research has highlighted benefits including the development of social skills such as social competence and social adjustment, relationship and engagement skills such as making friends, communicating, cooperation, sharing, helping others, solving problems, and empathy, as well as learning to follow social conventions such as complying with rules and trying not to repeat negative behaviours (Bedard et al., 2020; Harlow et al., 2020). Other positive psychological outcomes include behaviours relating to responsibility, courage, respect, self-discipline and independence. Also, there can be fewer emotional problems such as feeling worried or anxious, withdrawn or depressed (Harlow et al., 2020; Panza et al., 2020).

There is much literature describing the Positive Youth Development paradigm, based on the notion that young people have resources to be developed rather than problems to be solved (Holt et al., 2017). Individuals within particular social environments can build strengths and foster positive development. For example, young people can develop self-efficacy, respect for societal and cultural norms, and experience positive exchanges with peers and community members (Holt et al., 2017). Within the sporting context, this can occur through interactions with adults such as coaches and parents as well as development of peer relationships with their team members. These outcomes can be described within the personal domain, social domain or physical domain. In the personal domain, sports can promote development of positive self-perceptions such as confidence and self-esteem, academic benefits through learning to persevere and work hard, and attitudes and practices including respect for others, independence, taking personal responsibility, maintaining a positive attitude, problem-solving skills, stress management and goal setting. Within the social domain, developments can include teamwork, leadership and communication skills. Within the physical domain, developments can include fundamental movement skills and skills for living a healthy life (Holt et al., 2017).

Health benefits of participation in sports for adults and older adults

Compared to children and adolescents, there is less literature on the health benefits of participation in sports by adults. However, there are some similar

trends. A systematic review of the psychological and social benefits of participation in sports for adults identified a long list of potential benefits, the main themes being enhanced well-being and reduced distress and stress (Eime et al., 2013a). In a more recent review of the social and psychological health outcomes of team sports, the most frequently reported participant outcomes were emotional social support, sense of belonging, higher self-esteem, social networks and social interaction (Andersen et al., 2018). Adults in other studies have reported perceived benefits of participation in sports including improvement or maintenance of health and well-being, improvement in physical performance and appearance, the loss or maintenance of weight, and getting together and meeting other people (Oliveira-Brochado et al., 2017).

For older adults, participation in sports has been associated with a range of positive health outcomes and several studies have highlighted that participation can be a vehicle to negotiate the negative stereotypes of ageing (Jenkin et al., 2017; Chan Hyung Kim et al., 2020). Participation in sports by older adults has been associated with improved life satisfaction; lower depression, anxiety and stress; positive mood state; and other personal psychological outcomes such as personal empowerment, self-confidence and self-esteem (Chan Hyung Kim et al., 2020). Participation in sports by older adults has been shown to be positively associated with general happiness, social capital including feelings of trust and safety, and neighbourhood connections (Kim et al., 2020). Similarly, Jenkins et al. reported that older adults often participate in sports to develop and maintain community engagement, foster social connections, decrease social loneliness and reinforce their social identity (Jenkin et al., 2017). Further, for older adults, health is often a main motivation for participation, in relation to sports enhancing their physical, mental and/or social health (Jenkin et al., 2017). A systematic review of the psychosocial outcomes of older adults' participation in sports revealed that participation in sports influences outcomes specific to ageing, including cognitive/perceptual, emotional, social and motivational outcomes (Gayman et al., 2017).

Sports and physical activity and health-related quality of life

While there are a wide range of potential benefits of participation in sports which can differ across the lifespan, some studies have specifically investigated the relationship between participation in sports and physical activity and health-related quality of life (Eime et al., 2010; Snyder et al., 2010; Eime et al., 2014; Vella et al., 2014; Casey et al., 2016; Lindsay-Smith et al., 2019; Moeijes et al., 2019). There is literature highlighting the different health benefits across the lifespan according to different age groups. Further there is an abundance of literature highlighting the fact

that participation in sports is much higher for males than it is for females (Eime et al., 2016, 2019). However, to our knowledge there is no literature describing any differences in the broad health outcomes of participation by gender.

A recent study of children measured HR quality of life as defined by self-perceived enjoyment and satisfaction with one's personal health situation (Moeijes et al., 2019). In this study, children who were highly engaged in sports participation had better HR quality of life than those who were less active through sports and non-members of sports clubs (Moeijes et al., 2019). Similarly, a longitudinal study investigated the association between participation in sports for children and their parent-reported HR quality of life (Vella et al., 2014). Children who played sports continually between the ages of 8 and 10 years had greater parent-reported HR quality of life at age 10 compared to those who did not participate in sports, or those who started playing sports after the age of 8 (Vella et al., 2014). Further, in a recent study on the associations between frequency of participation in sports and HR quality of life in high-school athletes, more hours per week of participation in sports was significantly associated with lower depressive symptoms (Gagliardi et al., 2020).

For adults, a study investigated HR quality of life and life satisfaction of women participating in club-based sports compared to women engaged in gym-based activities or walking (Eime et al., 2009). These studies supported the concept that being physically active in a socially engaged manner can contribute to improved social and mental health and life satisfaction (Eime et al., 2009, 2013a).

A study of older adults who were involved with community groups reported that those whose group activities included physical activity had better HR quality of life a year later than those in a non-physical activity social group (Lindsay-Smith et al., 2019). The older adults spoke of the social aspects of the physical activity programmes as the main motivator to remaining active (Lindsay-Smith et al., 2019).

The Health through Sport conceptual model depicts the relationship between determinants driving participation in sports and the reported psychological and social health benefits of participation. The model links components of HR quality of life – physical, psychological and social – to participation in sports, from the informal and individual forms through to organised and team sports (Eime et al., 2013a, 2013b). Through these systematic reviews and development of the conceptual model, the critical importance of the social nature of many sports is highlighted (Eime et al., 2013a, 2013b). Any type of activity can lead to physical health benefits; however, it is the organised and team-based nature of certain sports activities that can provide improved psychological and social health benefits

above those provided by individual or informal sports activities (Eime et al., 2013a, 2013b). These conclusions have been further supported by more recent research which reported that team sports for adults was associated with improved social and psychological health compared to individually-based sports (Andersen et al., 2018).

Role of sports in rural and regional areas

Participation in sports is consistently reported as being higher in rural and regional areas, and it is often conjectured that this is due to the cultural and social identity of sports in rural and regional areas (Eime et al., 2018), and that rural and regional areas generally have traditional sports but not the larger range of choice of leisure-time activities evident in metropolitan areas (Eime et al., 2016). Further, there is extensive research highlighting the central community role that sports can play in rural and regional areas (Tonts, 2005; Spaaij, 2009; Mooney et al., 2012). Sports has been described as the glue that holds rural and regional communities together (Spaaij, 2009). In these communities, local sports clubs are vital community hubs that foster social cohesion, local and regional identities and a shared focus and outlet (Spaaij, 2009). Similarly, sports in rural and regional Australia has been described as an essential ingredient in the socio-cultural identity of communities (Tonts & Atherley, 2010). The identity of place and community is formed through diverse local and regional social interactions, practices and memories. Central to this are the symbolic community boundaries that sports creates, which provide a sense of difference with neighbouring towns, and which define and develop local identities (Tonts & Atherley, 2010). As noted earlier, this makes sports clubs and the federations that manage their competitions important civil society actors.

Mooney et al. (2012) also discuss the social identities of rural and regional adolescents in the context of participation in sports. In rural and regional areas there are fewer sports and organised or structured physical activities for girls to choose to play, and this is highlighted by the title of the paper 'You're no-one if you're not a netball girl' and 'netball is just what you do in a small town if you are a girl' (Mooney et al., 2012, p. 34). Australian football and netball are the main winter sports in these communities and nearly everyone from the community attends 'footy' and netball on the weekend – it is their main social engagement and avenue for social networking, and it is seen as the lifeblood of the community (Mooney et al., 2012). However, these sports clubs can be difficult for some with lesser sports-specific skills to be accepted and able to get a place on a team, and so they can feel left out of both the sports and the community spirit (Mooney et al., 2012).

The role of sports in rural and regional communities in the provision of social infrastructure and social identity is not unique to Australia, with

similar observations being made in other countries including Canada (Rich, 2021) and in China, with the provision of community sports being seen as promoting both health and inclusion (Chen & Liu, 2020). Participation in sports is beneficial, not only for individuals but for rural communities too, as it enhances individuals' social well-being and facilitates social inclusion (Chen & Liu, 2020). More broadly, participation in sports contributes to the accumulation of social capital, and as such, sports is a valuable asset with positive impacts in regional communities (Biernat et al., 2020).

Many studies have investigated HR quality of life and participation in sports, but generally have not specifically identified individuals' residential location and therefore have not examined differences in HR quality of life of sports participants in rural and regional areas compared to metropolitan cities. However, one study of adolescent girls in rural and regional areas within Victoria, Australia (Casey et al., 2016) found that girls who spent high amounts of time playing sports had higher values of HR quality of life than girls who spent high amounts of time on the computer or playing video games (Casey et al., 2016). In the wider context of this book, we hope to contribute to the body of knowledge about the role that sports organisations in rural or regional areas can play as places of collective (positive) action in communities.

The goal of the present study was to investigate the contribution of participation in sports and physical activity to the HR quality of life of individuals before and during COVID-19, with a particular focus on differences between residents in regional and rural areas and those in metropolitan areas. Specifically, the aims of the study were to compare levels of HR quality of life in metropolitan areas with levels in rural and regional areas of Australia, and to investigate the relationships between HR quality of life and participation in sports and physical activity, across age and gender.

The specific research questions explored (1) What is the HR quality of life of individuals in rural and regional areas compared to metropolitan areas? (2) How does the HR quality of life of individuals differ according to type of activity participated in? (3) How do the sports and physical activity profiles and health outcomes of individuals align to the Health through Sport conceptual model?

Methods

Data for this study was collected via an online survey conducted in Australia between 6 May and 23 June 2020, during the COVID-19 pandemic and associated stresses and restrictions. Recruitment of study participants was primarily facilitated through research partnerships with Australian National Sporting Organisations (NSOs) of popular sports, including bowls, golf, tennis, cricket and Australian football. All participants registered in the 2019 and/or

2020 seasons or calendar years, and aged 13–85 years, were invited to participate in the study. A second convenience sample was recruited using snowball sampling methods initiated through a range of media and non-sports community organisations with access to a range of networks more representative of the population as a whole. While it was expected that this second sample would include some registered sports participants, the aim was to recruit comparison samples who were not registered sports participants, including participants in informal sports or physical activity, and non-participants in any form of sports or physical activity. As a result of the modes of recruitment, and the difficulty of engaging potential inactive respondents to complete a survey largely focused on sports and physical activity, the resulting sample was heavily weighted towards sports and physical activity participants.

The survey questions included:

- Socio-demographic characteristics – date of birth, gender, residential postcode, individual and household characteristics;
- Sports and physical activity profile – sports and other physical activities engaged in, before and during the COVID-19 pandemic, and questions about settings of participation (organised, i.e. registered, informal), motivations, frequency and duration of activity; all activities were also categorised as team or individual mode;
- Quality of life – self-report indicators of general, physical and mental health, social capital, well-being and life satisfaction. Items were derived or adapted from:
 - SF-36 and SF-12 instruments: health-related quality of life
 - Australian Institute of Health and Welfare (AIHW): feelings of loneliness, worry (Australian Institute of Health and Welfare, 2012)
 - Ohio State University Brief Resilience Scale (BRS) and Resiliency Attitudes and Skills Profile (RASP): resiliency (Hurtes & Allen, 2001)
 - British Household Panel Survey (BHPS) (Powdthavee, 2008) and Australian Longitudinal Study on Women’s Health (ALSWH); life satisfaction (Women’s Health Australia, 2008)
 - Australian Bureau of Statistics (ABS) General Social Survey: indicators of social well-being and social capital – connectedness, access to support and perceptions of trust and safety (Australian Bureau of Statistics, 2012)
 - AIHW indicators of social and emotional well-being: close friendship, attachment to peers, communication with parents (Women’s Health Australia, 2008)

Analysis

In this chapter we report on an analysis of the five self-reported HR quality of life indicators described in Table 17.1. These represented five aspects of HR quality of life as perceived at the time of the survey, during the COVID-19

Table 17.1 Health-related quality of life indicators.

Aspect	Scale	Indicator
General health	1–5	5-point Likert item: 1=Poor, 5=Excellent
Physical health	1–5	5-point Likert item: 1=Poor, 5=Excellent
Mental health	1–5	5-point Likert item: 1=Poor, 5=Excellent
Well-being	1–5	Mean of 14 items: 1=Never, 5=All the time (negative items reverse scored)
Life satisfaction	1–10	10-point numerical scale: 1=Least satisfied, 10=Most satisfied

pandemic and the associated stresses and restrictions. Two types of statistical analysis were conducted. First, independent samples t-tests were used to compare the five indicators for residents of metropolitan areas and rural and regional areas. Second, for each of the five indicators, a series of four 2-factor analyses of variance (ANOVA) was conducted. The first factor in all analyses was ‘area’, and the second factor was four other characteristics of the respondents, analysed one at a time. The purpose was to examine the effect of area after controlling in turn for each of the other potential key determinants of HR quality of life:

- gender;
- age (adult, adolescent);
- sports/physical activity setting (organised only, informal only, both organised and informal, neither);
- sports/physical activity mode (team only, individual only, both team and individual, neither).

The sports and physical activity setting and mode variables were derived from questions framed in terms of annual registrations and activity within the previous twelve months, and so they reflected activities prior to the restrictions of the COVID-19 period.

Each of the $5 \times 4 = 20$ 2-factor ANOVAs included three sources of variation in the HR quality of life indicator:

1. The ‘main effect’ of area, representing differences between the two areas after adjustment for the effects of each respondent characteristic in turn.
2. The ‘main effect’ of the respondent characteristic, which is of interest in its own right; in particular, the last two characteristics are of interest with regard to the Health through Sport conceptual model.
3. The interaction between area and the respondent characteristic, which indicates whether each characteristic acts as a modifier for the relationship between area and the HR quality of life indicator, i.e. whether the relationship between area and the HR quality of life indicator is different for the subpopulations defined by the categories of each characteristic.

Results

After data checking and cleaning, data from 5,491 survey respondents was analysed, 3,569 from metropolitan areas and 1,922 from rural and regional areas. Table 17.2 shows, for each of the respondent characteristics, the response profiles (percentages in each category) for metropolitan areas and rural and regional areas. The results of chi-square tests indicate differences in the profiles of three of the four characteristics, which indicates that when investigating area effects, controlling for these variables was warranted.

Table 17.2 Respondent characteristics: summary statistics by geographical area.

Characteristics	Geographical area				p-value ¹
	Metro		Regional and rural		
	N	%	N	%	
Total sample	3,569		1,922		
Gender	3,569		1,922		<.001
Female		63.1		56.0	
Male		36.3		43.7	
Other or no response		0.5		0.5	
Age	3,569		1,922		.002
Adult		88.0		90.8	
Adolescent		12.0		9.2	
Sports & physical activity setting	3,492		1,897		.069
Club only		21.7		23.7	
Informal only		10.3		10.0	
Both		67.1		66.0	
Neither		0.9		0.4	
Sports & physical activity type	3,490		1,896		<.001
Team only		15.1		12.0	
Individual only		27.2		39.3	
Both		56.8		48.3	
Neither ²		0.9		0.4	

¹Chi-square test of independence

Table 17.3 shows summary statistics – means, standard deviations and medians of the five HR quality of life indicators – for metropolitan areas and rural and regional areas, together with the results of the t-test comparisons. The results indicate that, with no adjustment for the respondent characteristics, self-reported physical health was higher, by a statistically significant amount, in metropolitan areas.

The results of the ANOVA analyses for each of the five HR quality of life indicators are discussed in turn. For each indicator, there are four ANOVAs. Regarding general health, each of the four respondent characteristics – gender, age, setting and mode – had statistically significant main effects (gender $p < .001$ in each case). Females reported better general health than males, and adolescents reported better general health than adults. For sports/physical activity, players of both organised and informal sports/physical activity had the best general health, non-players had the worst, and players in either one of organised or informal settings reported intermediate levels. Players of individual sports/physical activity had the best general health, non-players had the worst, and players of team sports/physical activity reported intermediate levels. However, there were no statistically significant effects of area in any of the four models (consistent with the null results of the t-test) and

Table 17.3 Health-related quality of life indicators: summary statistics by geographical area.

Quality of life indicators	Geographical area								p-value ¹
	Metro				Regional and rural				
	N	Mean	Std dev.	Median	N	Mean	Std dev.	Median	
General health	2,918	3.48	0.96	4	1,595	3.44	0.92	4	.180
Physical health	2,905	3.35	0.98	3	1,588	3.28	0.94	3	.010
Mental health	2,910	3.31	1.07	3	1,590	3.33	1.04	3	.595
Well-being	2,740	3.61	0.66	3.71	1,503	3.62	0.64	3.71	.410
Life satisfaction	2,789	7.06	1.78	7	1,540	7.13	1.80	7	.261

¹Independent samples t-test

Note: For each quality of life indicator, the higher mean value is shaded grey. Significant p-values ($< .05$) are also shaded grey.

no statistically significant interactions. In short, general health showed no relationship, simple or more complex, to area.

For physical health, once again each of the four respondent characteristics – gender, age, setting and mode – had statistically significant main effects ($p < .001$ in each case). Females reported better physical health than males, and adolescents reported better physical health than adults. The patterns of physical health across the categories of sports/physical activity settings and modes were similar to those for general health. The effect of area remained statistically significant after adjustment for gender ($p = .011$) and age ($p = .025$), with better physical health reported in metropolitan areas than in rural and regional areas. However, the effect of area was not significant after adjustment for setting or mode, suggesting that the regional difference in physical health is to some degree attributable to a greater focus on the health-promoting role of sports in metropolitan areas than in rural and regional areas. There were no statistically significant interactions, indicating that any area differences were not moderated by the respondent characteristics.

With regard to mental health, well-being and life satisfaction, the effects of area and the four respondent characteristics were more complex, with few significant main effects, but a number of statistically significant interactions between area and one or other of the characteristics.

For mental health, the only statistically significant main effect was for setting ($p < .001$), and there were statistically significant interactions between area and setting ($p = .048$) and area and gender ($p = .006$). Regarding gender, the highest levels of mental health were reported by metropolitan males and rural and regional females, and the lowest levels by metropolitan females, with rural and regional males reporting intermediate levels. Regarding setting, the p -values show that the evidence for an interaction was much weaker than that for the main effect. That was reflected in the patterns of mental health across the categories of sports/physical activity settings and modes, which were, with only minor differences in the detail between metropolitan and rural and regional areas, similar to those for general health and physical health.

For well-being, the only statistically significant main effects were those of gender ($p = .025$) and setting ($p < .001$), and there were also significant interactions in each case between area and setting ($p = .005$) and area and gender ($p < .001$). Regarding gender, as for mental health, the highest levels of well-being were reported by metropolitan males and rural and regional females, and the lowest levels by metropolitan females, with rural and regional males reporting intermediate levels. Regarding setting, the pattern of well-being across the categories of sports settings were, with only minor differences in the detail between metropolitan and rural and regional areas, similar to those for general health, physical health and mental health.

For life satisfaction, there was a statistically significant main effect for area ($p=.034$) when adjusted for the effect of mode ($p=.001$), with higher levels of life satisfaction being reported in rural and regional areas. There were also statistically significant interactions between area and age ($p=.027$) and area and setting ($p=.016$). Regarding age, reported levels of life satisfaction were highest among rural and regional adults and lowest among rural and regional adolescents, with metropolitan adolescents and metropolitan adults reporting similar levels, slightly below the level of rural and regional adults. Regarding settings, the three physically active groups in both metropolitan and rural and regional areas, together with the physical inactive metropolitan group, all reported similar levels of life satisfaction, whereas the physically inactive respondents from rural and regional areas reported much higher levels of life satisfaction. Considering the relatively small sample sizes in the physically inactive groups, and the marginally significant p -value, this may be a chance anomaly.

Discussion

This chapter presents the results of the investigation of the self-report indicators of the HR quality of life of individuals in rural and regional areas and in metropolitan areas of Australia, and what might be the contribution of participation in sports and physical activity, age and gender. While differences were observed in general health with respect to all of age, gender, sports and physical activity settings and modes, no differences were observed in general health between metropolitan areas and rural and regional areas, in any of the analyses conducted.

The only consistent difference observed between metropolitan areas and rural and regional areas was in physical health, with those in metropolitan areas reporting better physical health than those in rural and regional areas. This is not surprising given that people living in rural and regional areas consistently report poorer health and higher rates of chronic disease than their metropolitan counterparts, which can be exacerbated by poorer access to health facilities and services (Fennell et al., 2018). The difference remained after adjustment for gender and age, but not after adjustment for sports/physical activity settings or modes, suggesting that the difference could be to some degree attributed to differences between the patterns of sports participation in the two areas.

For mental health, well-being and life satisfaction, there were some differences between metropolitan areas and rural and regional areas, but these were more complex and dependent on gender, age and sports and physical activity settings and modes. Highest levels of mental health and

well-being were found among metropolitan males and rural and regional females, and lowest among metropolitan females. This may be directly influenced by COVID-19 restrictions. At the time of the survey, both the levels of risk and the impacts of the restrictions imposed were greater in the more densely populated metropolitan areas. Women were reportedly more likely to be burdened by the combination of working and caring duties than men, and more likely to lose their jobs than men (Farre et al., 2020).

Highest levels of life satisfaction were reported by rural and regional adults and lowest levels by rural and regional adolescents, with metropolitan adolescents and metropolitan adults reporting similar intermediate levels. This suggests a more differentiated pattern of changing aspirations throughout the lifespan in rural and regional areas, with rural and regional adolescents hankering for the ‘bright lights, big city’, while their parents are more likely to perceive other lifestyle, social and economic advantages of non-metropolitan environments.

Regarding sports and physical activity, in general, being active was associated with higher levels of all five HR quality of life indicators than for those who were inactive, which is consistent with the Health through Sport conceptual model. More specifically, both settings and modes of sports and physical activity had differential impacts on general health and physical health, while settings also impacted on mental health and well-being, whereas modes also impacted on life satisfaction.

The study had limitations with regard to both external and internal validity. Regarding external validity and representativeness of the sample, the sampling design was observational, with respondents self-selecting to participate. Nevertheless, Table 17.2 shows that there was good representation across the categories of region and gender. The sample was skewed towards adult respondents, but the adolescent sample size was substantial. The great majority (3,461 and 1,889 respectively) were active participants in sports, physical activity, or both. Over ninety different codes of sports and physical activity were reported, with eighteen codes contributing more than 1 per cent of all reported instances of participation. While the proportion of physically inactive people in the sample was small in absolute terms, the sample size of this group was nevertheless considerable. The different types and settings of activity were well represented.

Regarding internal validity, the study was cross-sectional and observational and hence demonstrated relationships rather than causal links between the dependent quality of life variables and the key explanatory factor – region; appropriate adjustments were made for the potential confounders age and gender, as well as the activity-related explanatory factors – settings and types of activity. Regarding the activity-related factors in particular, the cross-sectional nature of the study makes it impossible to rule out reverse

causality, whereby quality of life measures might be determinants of activity, as well as or instead of, being affected by activity.

Conclusion

This study demonstrates that indicators of HR quality of life differ among those living in rural and regional areas compared to metropolitan areas, in conjunction with differences attributable to gender, age and settings and modes of sports/physical activity participation. We know that the social nature of participation in sports and physical activity can positively influence participation and quality of life. It is likely that the magnitude of contribution of community sports and physical activity organisations, as civil society citizens, differs between areas, such as rural compared to metropolitan communities. This may contribute to differences in quality of life; however, these differences are likely to be also influenced by age, gender and other demographics. Further, there are indications that COVID-19 has impacted the HR quality of life of individuals differently according to their circumstances and, in particular, that females more than males (in metropolitan areas) were negatively affected by the pressures of combining home and home-schooling duties with a higher likelihood of job loss. In conclusion, the key elements of the Health through Sport conceptual model are supported by this research, in that participation in sports can lead to improved health benefits.

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