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Original research

Exploring a mother's engagement in team sport: An application of an extended theory of planned behaviour

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ABSTRACT

Objectives: Mothers of young children are at-risk for low physical activity. Organised team sport provides additional social and mental health benefits above that of physical activity. To better understand engagement in team sport, this study aimed to apply the theory of planned behaviour, with the addition of maternal identity and social support.
Design: A prospective two-part online study was conducted two weeks apart to collect data from 122 mothers in Australia ($M = 32.22$, $SD = 4.42$).
Methods: Two hierarchical multiple regression analyses were conducted to predict intention and engagement in team sports. A moderation was conducted to determine the effect of social support on the intention–behaviour relationship.
Results: Results indicated that 65.1 % of the variance in intention was explained, with years since previously played ($\beta = -0.17$), attitudes ($\beta = 0.20$), subjective norms ($\beta = 0.41$), and perceived behavioural control ($\beta = 0.16$) being significant, and level of team sport social support, and maternal identity being non-significant. Additionally, 65.7 % of the variance in behaviour was explained, with perceived behavioural control ($\beta = 0.28$) and intention ($\beta = 0.50$) being significant, and years since previously played and social supportbeing non-significant. Social support moderated the relationship between intention and engagement, such that social support facilitated engagement.
Conclusions: The findings show support for the predictive ability of the theory and mothers within a sporting context. Behaviour change techniques related to strengthening intention and personal agency could be used to inform interventions intending to increase team sports participation.

Practical implications

- The findings identify the specific factors (i.e., subjective norms, attitudes, perceived behavioural control) that may contribute to explaining a mother's engagement in team sport and exercise.
- The finding that social support helps mothers engage in team sport suggests that interventions focusing on building a supportive community could promote a mother's participation in team sport and exercise.
- Focusing on behaviour change techniques closer to when a mother may drop out, particularly those aimed at strengthening intention and personal agency (e.g., goal setting) can be effective in increasing a mother's team sport and exercise participation postpartum.

1. Introduction

Regular physical activity is essential for a healthy lifestyle, offering numerous physiological and psychological benefits.[1] Despite widespread awareness of these advantages, there is a concerning lack of engagement in physical activity among mothers with young children as they often do not resume physical activity levels from pre-pregnancy.[1] Efforts to promote postpartum physical activity have yielded mixed results, with interventions having only short-term, modest impacts on activity frequency and no significant effect on overall involvement.[2]

Whilst some mothers reduce their physical activity postpartum, others maintain or increase participation in group contexts, including organised team sports.[3] Organised team sport is defined as a sport played within a team, is organised and competitive in nature, generally directed by an adult, and involves rules and formal practice.[4,5] Recommendations from Sports Medicine Australia and the Australian Psychological Society emphasise the benefits of team sport engagement for optimising social and mental health benefits.[6] Return-to-sport frameworks have been developed for postpartum athletes, but they may not

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be applicable to recreational mothers.[7] Given the challenges of motherhood, including pregnancy, childbirth, childcare, career, and home demands, it is essential to understand mothers' engagement in recreational team sports. Identifying modifiable psychosocial influences of engagement can guide targeted interventions for mothers.[8]

The theory of planned behaviour emphasises that intention is a central factor in engagement and is shaped by attitudes (e.g., beliefs about the behaviour's positive or negative value), subjective norms (e.g., perceived pressure from important others regarding behaviour), and perceived behavioural control (e.g., belief in ability to perform a behaviour).[9] It also suggests that both perceived behavioural control and intention predict actual behaviour, with stronger intentions and greater perceived control leading to higher engagement.[9] Despite its application to various health-related behaviours, including adolescent team sport participation,[10] there remains a significant unaccounted variance in both intention and engagement, known as the "intention–behaviour gap".[11] This refers to a discrepancy between an individual's intention to perform and the actual performance of the behaviour.[11] To address these limitations, researchers often propose incorporating additional psychosocial factors to strengthen the theory's ability to predict behaviour, for example sociodemographic (e.g., employment status), personality (e.g., conscientiousness), and social (e.g., social support) factors.[12,13]

Identity significantly predicts behavioural intentions in various contexts (e.g., exercise, alcohol consumption, and healthy eating), above and beyond attitudes, subjective norms, and perceived behavioural control, with the addition of identity explaining a further 6 % of the variance in intention.[14] Transitioning to motherhood often involves a profound shift in a woman's identity (i.e., maternal identity).[1] This transformation poses additional barriers to sports participation, as cultural expectations and societal norms dictate how mothers perceive and fulfil their roles.[8] For example, the ethic of care reinforces women's roles as the primary caregiver, emphasising their selfless sacrifice in prioritising their child's needs above their own, contributing to the good mother ideal.[15] Balancing the maternal role and engaging in personal activities like sports may create unrealistic pressures, leading to feelings of guilt and loss of self-identity, particularly when mothers feel unable to meet the perceived ideal.[16] Given this, it is likely that maternal identity may impact on their beliefs and attitudes around physical activity participation, leading them to have no intention to engage in activities that do not contribute to their identity as a 'mother'. However, the influence of maternal identity on behavioural intentions to participate in team sports remains understudied, with no prior research exploring this concept.

Social support, particularly from significant others, is a crucial role for mothers in facilitating self-care with maternal responsibilities.[1] Social support significantly predicts intention to engage in physical acitivity[8] and reduces the intention–behaviour gap in other health-related behaviours such as diabetes management[17] and fruit and vegetable consumption.[18] This means that individuals with more support are more likely to align their behaviour with their intentions. Researchers have proposed that the relationship between intention and physical activity engagement may be strengthened by social support,[13] given its moderating effects on other behavioural engagement. Specifically, if individuals have social support, it is much more likely that they will have greater intentions to engage, and also be more likely to actually engage in the behaviour. Whilst this relationship was not found for older adults engaging in physical activity,[12] no research has explored this relationship in sport participation and mothers. Therefore, social support remains a potentially important predictor of sport participation among mothers and warrants further investigation.

1.1. The current study

The aim of this study is to identify, and develop a greater understanding of, the predictors of a mother's engagement in team sports using an extended theory of planned behaviour (see Fig. 1). Informed by the tenets of the theory and previous research, it is hypothesised that: (i) Attitudes, subjective norms, perceived behavioural control, maternal identity, and social support will predict a mother's intention to engage in team sport; (ii) perceived behavioural control and intention will directly predict engagement in team sports and; (iii) social support will moderate the relationship between intention and behaviour, such that the relationship between intention and engagement in team sports will be stronger at higher levels of social support.

2. Method

Methods are reported using the International Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cohort study designs (see Supplementary materials).[19]

2.1. Procedure

Based on prior work,[20] a study on planned behaviour in physical activity used a large effect size ($f^2 = 0.56$). An a-prior power analysis (danielsoper.com) for hierarchical multiple regression, with an error probability of 0.05, a power level of 0.80, and six predictors set a minimum of 39 participants at time one to account for an expected 30 % attrition at time two.

A prospective design was used with data collected online at two time points, two weeks apart. A follow-up period of two weeks was

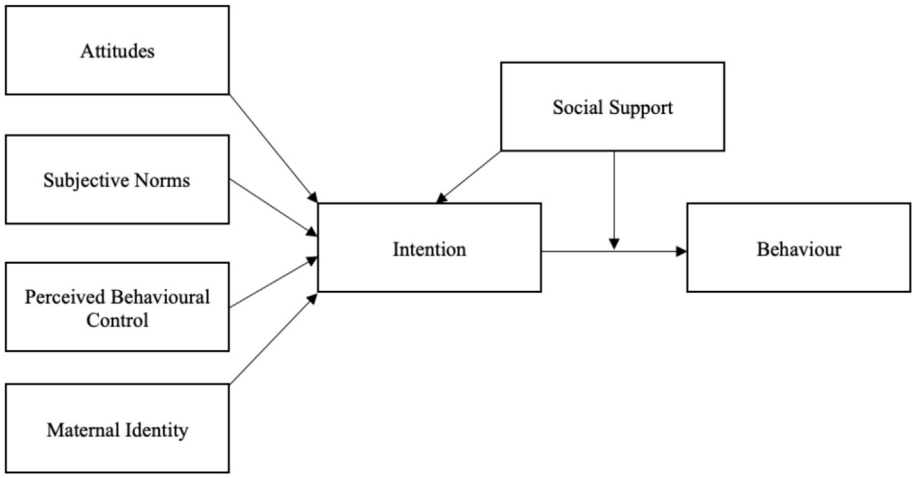

Fig. 1. Proposed extended theory of planned behaviour.[9]

chosen to account for multiple training and game sessions. The current study was approved by the Human Research Ethics Committee of the University of Wollongong (ethics approval number: 2022/099). To meet participation eligibility, mothers were required to have a young child (biological or non-biological) aged 0–3 years, English proficiency, be over the age of 18 years, and live in Australia. Participations must also have prior or current involvement in team sports, as previous engagement significantly influences future intentions and behaviour.[21,22] This allows for the change in behaviour to be a more accurate prediction of team sport engagement. Participants were recruited from the University and from the community via social media. Interested participants were presented with an information sheet, and a consent form where they were required to provide informed consent by checking a box. Participants that did not provide consent were unable to proceed. Participants who responded "no" to any of the eligibility criteria were unable to continue. Participants then completed a series of demographic questions, the theory of planned behaviour and psychosocial variable measures, which were presented in a random order to reduce patterned and bias responses and provided an email address to be contacted about the time two survey. The time one survey took approximately 20 mins.

After two weeks, participants received an email with the link to the second online survey to record if they engaged in team sport over the previous fortnight, which took approximately 5 mins. Only participants from the University were reimbursed for their time with course credit points.

2.2. Measures

The following measures were developed in accordance with recommendations for constructing theory of planned behaviour questionnaires.[23] To establish content evidence, the questionnaire was inspired by other health-behaviour research that has used the theory of planned behaviour.[8,24]

2.2.1. Time one

2.2.1.1. Demographic characteristics. Questions relating to participant demographics included: age, employment status, annual income, relationship status, living situation, number, age of children, previous or current engagement in team sports, years since last played (if applicable), and type and level of team sport.

2.2.1.2. Attitudes. Using a five-item measure developed for this study, participants rated their attitudes towards engaging in team sports. Items were answered on a 10-point semantic differential scale and were all reversed coded. For example, "For me to participate in a team sport in the next two weeks would be…" 0 (valuable) to 10 (worthless). The mean of the five responses represented the final score. Higher scores indicated more positive attitudes towards team sports engagement. The current study demonstrated good internal reliability ($\alpha = 0.85$).

2.2.1.3. Subjective norms. Participants rated their beliefs about significant others' approval or disapproval of them engaging in team sports using three items developed for this study. Two items assessed injunctive norms (e.g., "People who are important to me think I should participate in team sports in the next two weeks"), and the remaining assessed descriptive norms (e.g., "Most people who are important to me participate in team sport"). Items were rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The mean of the three items represented the final score. Higher scores indicated participants had greater beliefs about the extent to which significant others wanted them to engage in team sports. This subscale had good internal reliability in the current sample ($\alpha = 0.66$).

2.2.1.4. Perceived behavioural control. Three items developed for this study measured participants' personal agency to engage in team sports. Items were rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) (e.g., "Whether or not I participate in a team sport during the next two weeks is entirely up to me"). The average of the three responses represented the final score. Higher scores indicate a higher perceived sense of control to engage in team sports. The current scale illustrated good internal reliability ($\alpha = 0.71$).

2.2.1.5. Maternal identity. A mother's alignment with the maternal role was measured using the Maternal Identity Scale (MIS).[25] The MIS has 24 items over three subscales (attachment [e.g., "Holding my child closely is very important to me"], role competence [e.g., "I respond to my child's needs correctly"], and gratification [e.g., "My child is a reward in my life"]). Each item was rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Final scores were represented by the average of the three subscales combined. Higher scores indicated a stronger alignment with the maternal role. The MIS showed good internal reliability in the current sample ($\alpha = 0.85$).

2.2.1.6. Social support. A modified version of the Social Support for Exercise Scale[26] was used to assess a mother's social support external (e.g., partner, friends, family) to that of support within the team setting (e.g., teammates). Participants were asked to rate the frequency (over the past three months) of receiving support on a 5-point Likert scale from 1 (none) to 5 (very often). Each item of this scale began with the prompt, "During the past three months, my partner/other members of the household or my friends/family…" and was followed by a supportive action (e.g., "Gave me encouragement to participate in team sport"). A 'partner support score' and a 'family/friends support score' were computed using mean scores. A 'total support score' was then calculated by summing the 'partner support score' and a 'family/friends support score'. Higher scores indicated greater social support to engage in team sports. The internal reliability for this scale was high ($\alpha = 0.93$) in the current study.

2.2.1.7. Intention. Participants rated their intention to engage in team sports (e.g., "I intend to participate in team sports in the next two weeks") on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The mean of the two items represented the final score. Higher scores indicated greater intention. Our sample demonstrated good internal reliability ($\alpha = 0.80$).

2.2.2. Time two

2.2.2.1. Team sport engagement. Two weeks after time one, participants were asked to indicate if they had participated in team sport over the previous fortnight, with 0 = No, and 1 = Yes. Participants who reported participation were asked to estimate the number of individual days they engaged in team sports in total over the previous two weeks. The number of days was the dependent variable, with those who selected 'No' to engaging in the previous fortnight also scoring '0' days of engagement.

2.3. Data analysis

A missing values analysis was conducted at an individual item level. Cases that had 100 % of their data missing were identified and removed. Little's Missing Completely At Random (MCAR) test was then performed with the outcome variables (subjective norms, attitudes, perceived behavioural control, intentions, social support and maternal identity) and was non-significant, $\chi^2(1034, N = 122) = 1064.73$, $p = .247$. This indicates that the data was missing completely at random. Expectation maximisation was used to input the remaining missing data points.[27]

Descriptive statistics and Pearson's Bivariate Correlations were conducted on the unstandardised demographic and psychosocial variables. Demographics of dichotomous nature (e.g., level of team sport) were examined using Point Bi-Serial correlations (r_{pb}). The remaining continuous

variables (e.g., years since played) were reported using Pearson's r (r). Upon inspection, 'years since previously played' and 'level of team sport' were significantly correlated with the outcome variable of intention ($r = -0.53$, $p < .01$, $r = 0.20$, $p < .05$, respectively). Therefore, both demographics were included as covariates in regression one. 'Years since previously played' was also significantly correlated with engagement in team sport ($r = -0.44$, $p < .01$), and therefore was included as a covariate in regression two. See Table 1 for complete descriptive statistics and correlation matrix. Using IBM SPSS[28], two hierarchal multiple regression analyses were conducted. The first aimed to predict intention to engage in team sport, and the second to assess engagement in the previous fortnight, measured by the number of days engaged. Prior to the analyses, predictor variables were standardised to reduce multicollinearity.[27] The first hierarchical multiple regression added 'years since previously played' and 'level of team sport' as covariates in step one. In step two, attitudes, subjective norms, and perceived behavioural control were added. In step three, social support was added, and in step four, maternal identity was added. The second hierarchical multiple regression included years since previously played as a covariate in step one. Step two added perceived behavioural control and intention. Step three included social support. In step four, the interaction term between intention and social support was added. For a significant interaction, a simple slope analysis was performed at ± 1 *SD* from the mean.[29]

3. Results

3.1. Participants

A total of 330 survey attempts were documented. Participants with no child between the ages of 0 and 3 years ($n = 38$), no prior engagement in team sports ($n = 12$), and with 70 % or more missing data ($n = 53$) were excluded. After removal, a total of 227 participants remained at time one, and 122 participants at time two (attrition 53.74 %). In line with Liddelow et al[24] participants who did not complete both time one and time two ($n = 105$) were excluded. The final sample comprised of 122 participants.

Participants' age ranged from 21 to 44 years ($M = 32.22$, $SD = 4.42$), with the majority identifying as Caucasian (87.70 %, $n = 107$), living in New South Wales (58.20 %, $n = 71$) or Western Australia (25.40 %, $n = 31$) and working part-time (40.20 %, $n = 49$) or full-time (40.20 %, $n = 49$). Participants had between 1 and 4 children in total ($Mdn = 2.00$, $SD = 0.78$), and were either married or in a relationship (95.90 %, $n = 117$), and living with their partner (59.00 %, $n = 72$) or living with their partner and other family members (33.60 %, $n = 41$). A total of 36.10 % were currently engaging in team sports ($n = 44$), and 50 % had previously engaged ($n = 61$), with an average of 2.56 years since they last played ($SD = 3.90$). Participants reported to have engaged in netball (47.50 %, $n = 58$), soccer/football (15.60 %, $n = 19$), or other sports (17.2 %, $n = 21$) including tennis, hockey (field and ice), water polo, cheerleading, touch football and synchronised ice skating, at a recreational (60.70 %, $n = 74$) or representative level (15.60 %, $n = 19$).

At time two, 59.80 % of participants reported that they did not engage in team sport over the previous fortnight ($n = 73$), whilst 40.20 % reported that they engaged ($n = 49$) on an average one day ($SD = 1.36$) or 3.5 hours ($SD = 2.44$) over the fortnight.

Independent samples t-tests examined differences between participants who did and did not complete time two according to their age, years since previously played, total number of children, relationship status, living situation, employment status, level of sport, attitudes, subjective norms, perceived behavioural control, maternal identity, social support, and intentions. Results indicated that participants who did not complete time two had significantly more years since they previously played ($M = 5.30$, $SD = 5.79$) compared to those who did complete time two ($M = 2.56$, $SD = 3.90$), $t(137.49) = 3.69$, $p < .001$, using Welch's t-test. No other demographic or outcome variable showed significant differences between groups (see Supplementary materials).

3.2. Predicting intentions to engage in team sport

In step one, years since previously played and level of team sport were controlled for, and accounted for 31.2 % of the variance of intention ($R^2 = 0.31$, $F(1, 100) = 22.69$, $p < .001$). In step two, attitudes, subjective norms, and perceived behavioural control were entered and accounted for an additional significant 32.3 % of the variance in intention ($\Delta R^2 = 0.32$, $F(3, 97) = 28.57$, $p < .001$). In step three, social support was added and accounted for an additional non-significant 0.7 % of the variance in intention ($\Delta R^2 = 0.01$, $F(1, 96) = 1.91$, $p = .170$). In step four, maternal identity was included and accounted for an additional non-significant 0.9 % of the variance in intention ($\Delta R^2 = 0.01$, $F(1, 95) = 2.37$, $p = .127$). In combination, the six predictor variables collectively explained a significant 65.1 % of the variance in intention ($R^2 = 0.65$, adjusted $R^2 = 0.63$, $F(7, 65) = 25.28$, $p < .001$). Of these, years since previously played ($p = .019$), attitudes ($p = .014$), subjective norms ($p < .001$), and perceived behavioural control ($p = .027$) were significant predictors in the final model, partially supporting hypothesis one. This is a large effect ($f^2 = 1.87$).[30] Unstandardised (B) and standardised regression coefficients (β) and squared semi-partial correlations (sr^2) for predictors at each step are reported in Table 2.

3.3. Predicting engagement in team sport

In step one, years since previously played was controlled for and accounted for 19.2 % of the variance in team sport engagement ($R^2 = 0.19$, $F(1, 102) = 24.21$, $p < .001$). In step two, perceived behavioural control and intention were added into the regression model and accounted for

Table 1
Descriptive statistics and correlations of demographic variables, attitudes, subjective norms, perceived behavioural control, maternal identity, social support, intention, and team sports engagement.

	M	*SD*	2	3	4	5	6	7	8	9
1. Level of team sport[a]	–	–	−0.13	0.20*	0.19*	0.07	0.15	0.15	0.20*	0.17
2. Years since played	2.60	3.90	–	−0.45**	−0.38**	−0.27**	0.07	−0.40**	−0.53**	−0.44**
3. Attitudes	7.58	1.94		–	0.54**	0.37**	0.17	0.45**	0.62**	0.54**
4. Subjective norms	4.10	1.57			–	0.38**	0.24**	0.50**	0.68**	0.55**
5. PBC	4.43	4.50				–	0.19*	0.46**	0.46**	0.62**
6. Maternal identity	4.55	0.32					–	0.19*	0.09	0.04
7. Social support	4.50	2.20						–	0.57**	0.54**
8. Intention	4.40	2.24							–	0.73**
9. Team sport engagement	1.0	1.36								–

Note: M = mean; SD = standard deviation; PBC = perceived behavioural control. 2 = years since played; 3 = attitudes; 4 = subjective norms; 5 = PBC; 6 = maternal identity; 7 = social support; 8 = intention; 9 = team sport engagement.
[a] Reported as point bi-serial (*rpb*).
* $p < .05$ (two-tailed).
** $p < .01$ (two-tailed).

Table 2
Unstandardised (B) and standardised regression coefficients (β) and squared semi-partial correlations (sr^2) for predicating intention to engage in team sports, step 4.

	Variable	*B* [95 % CI]	β	sr^2	*p*-Value	R^2	ΔR^2	*F*	ΔF [*df*1, *df*2]
Step 4***					<.001	0.65	0.01	25.28	2.37 [1, 95]
	Years since played	−0.10 [−0.18, −0.02]*	−0.17	0.02	.019				
	Level of team sport	−0.40 [−0.97, 0.18]	−0.09	0.01	.178				
	Attitudes	0.44 [0.09, 0.79]*	0.20	0.02	.014				
	Subjective norms	0.92 [0.57, 1.30]***	0.41	0.10	<.001				
	PBC	0.37 [0.04, 0.69]*	0.16	0.02	.027				
	Social support	0.26 [−0.08, 0.60]	0.11	0.01	.133				
	Maternal identity	−0.22 [−0.51, 0.06]	−0.10	0.01	.127				

Note: *B* = unstandardised coefficient; CI = confidence interval; β = beta (standardised coefficient); sr^2 = squared semi-partial correlation coefficient. PBC = perceived behavioural control. *df* = degrees of freedom.
* $p < .05$ (two-tailed).
*** $p < .001$ (two-tailed).

an additional 43.7 % of the variance in team sports engagement ($\Delta R^2 = 0.44$ $F(2, 100) = 58.87$, $p < .001$). In step three, social support was added and accounted for an additional non-significant 0.5 % of the variance in team sport engagement ($\Delta R^2 = 0.01$, $F(1, 99) = 1.47$, $p = .228$). In step four, the intention × social support interaction was added and accounted for an additional 2.3 % of the variance in team sport engagement ($\Delta R^2 = 0.02$, $F(1, 98) = 6.43$, $p = .013$). Overall, the combined predictors explained 65.7 % of the variance in team sport engagement ($R^2 = 0.66$, adjusted $R^2 = 0.64$, $F(5, 98) = 37.51$, $p < .001$). Intention ($p < .001$), perceived behavioural control ($p < .001$) and the interaction term intention × social support ($p = .013$) were all significant predictors, supporting hypotheses two and three. This is considered a large effect ($f^2 = 1.92$).[30] See Table 3 for unstandardised (B) and standardised regression coefficients (β) and squared semi-partial correlations (sr^2) for predictors at each step.

A simple slopes analysis was performed, and the significant interaction (intention × social support) was plotted to establish whether intention was related to team sports engagement at high (+1 *SD*) or low (−1 *SD*) levels of social support. The simple slopes analysis indicated significant positive associations between intention and team sport engagement at both low levels of social support ($B = 0.27$, $t(75) = 2.04$, $p = .045$) and high levels of social support ($B = 1.13$, $t(75) = 7.17$, $p < .001$) (see Supplementary materials). Upon closer inspection of the data, most participants who reported low intention, but high social support reported zero engagement in team sports in the previous fortnight. Thus, this reported negative engagement is trivial and likely a result of the other variables in the regression.

4. Discussion

The primary aim of this study was to utilise an extended theory of planned behaviour to assess the psychosocial predictors of team sports engagement for mothers with young children. Together, the variables predicted 65.1 % of the variance in intention to engage in team sport, with years since previously played, attitudes, subjective norms, and perceived behavioural control being significant, partially supporting hypothesis one. Maternal identity and social support did not predict intention. Hypothesis two was supported as both intention and perceived behavioural control predicted engagement in team sports. Finally, hypothesis three was supported as social support significantly moderated the relationship between intention and behaviour, such that there was a positive association between intention and team sports engagement at low and high levels of social support.

4.1. Predicting intention to engage in team sport

Consistent with the theory of planned behaviour[9] and previous research,[8,31] attitudes, subjective norms, and perceived behavioural control significantly predicated intention. This suggests that mothers with more positive attitudes, perceived approval from important individuals, and confidence to participate in team sports are more likely to have stronger intentions to engage. Notably, subjective norms were consistently the most influential predictor in this study and previous research for mothers.[8] This may be expected given that motherhood is associated with critical changes that may increase vulnerability to societal and cultural pressures to either engage or not engage in team sport. This pressure may lead mothers to seek the approval and support of important others regarding participation.[31]

The number of years since last engaged in team sports was a significant demographic predictor of intention, suggesting that mothers who have been away from team sports for longer periods have lower intentions to participate. This aligns with prior research indicating that the recency of past behaviour has a significant impact on re-engagement decisions.[32] Research on future interventions should focus on promoting positive attitudes and maternal confidence and emphasise the support of significant others around the time when mothers may discontinue sports engagement.[8]

The current study showed that maternal identity did not predict intention to engage in team sport, contrary to previous research.[33] A potential reason may be a ceiling effect as most participants had high maternal identity. The broad trait measure of maternal identity currently used might explain this effect. If a state measure of maternal identity was used, such that participants were asked how they feel as a mother regarding engaging in team sports, maternal identity may have accounted for more variance in intention and captured their unique experience in team sports. Future research may benefit from measuring maternal identity using questions specific to team sports engagement.

Contrary to existing literature,[1] there was no significant relationship between mothers' social support and their intention to engage in team sports, suggesting that social support may not be important for the current sample's behavioural intentions. It is unclear why this may be; however, one reason may be that a mother's internal belief in her behavioural ability outweighs perceived external support. This aligns with the suggestion that a mother's self-efficacy regarding active behaviour is an influential factor of behavioural intention.[34] However, more rich qualitative research is needed to further understand this concept.

4.2. Predicting engagement in team sport

The final model for predicting team sports engagement was significant, explaining approximately 66 % of the variance in behaviour, which is significantly greater compared to previous studies (19 % to 37 %).[20] Consistent with the theory of planned behaviour[8] and prior research,[20] the results show that a mother's intention to participate in team sport and their perception of the ease or difficulty of doing so (i.e., perceived behavioural control) were significant predictors of team sports engagement, with intention being the most influential. Consequently, sports clubs aiming to increase team sports participation among mothers who have dropped out could consider applying "implementation intentions", which aim to create useful habits and if–then-plans to modify behaviour. For example,

Table 3
Unstandardised (B) and standardised regression coefficients (β) and squared semi-partial correlations (sr^2) for predicating engagement in team sports, step 4.

	Variable	*B* [95 % CI]	β	sr^2	*p*-Value	R^2	ΔR^2	*F*	ΔF [*df*1, *df*2]
Step 4***					<.001	0.66	0.02	37.51	6.43 [1, 98]
	Years since played	−0.03 [−0.08, −0.02]	−0.08	0.02	.279				
	PBC	0.40 [0.19, 0.59]***	0.28	0.02	<.001				
	Intention	0.70 [0.48, 0.92]***	0.50	0.10	<.001				
	Social support	0.11 [−0.10, 0.31]	0.08	0.02	.293				
	Intention × social support	0.25 [0.05, 0.44]*	0.16	0.01	.013				

Note: *B* = unstandardised coefficient; CI = confidence interval; β = beta (standardised coefficient); sr^2 = squared semi-partial correlation coefficient. PBC = perceived behavioural control. *df* = degrees of freedom.
* $p < .05$ (two-tailed).
*** $p < .001$ (two-tailed).

setting specific goals that specify when, where, and how to engage may increase participation. [35] Future research should explore interventions that include such strategies to empower mothers to plan and schedule their team sports into their busy routines.

Social support moderated the relationship between intention and team sports engagement, revealing a positive association between intention and engagement at both low and high levels of social support. Specifically, mothers with low intentions and access to any social support are unlikely to engage, but as intentions increase, any level of support is likely to increase their engagement. This highlights that the benefit of social support appears dependent on levels of intention and thus aids translating intentions into behaviour. Given that team sport engagement often depends on support from others to participate,[1] such as access to childcare to attend sporting events,[36] exploring specific types of social support preferred by mothers wanting to engage warrants further investigation.

4.3. Study limitations

This pioneering study applies the theory of planned behaviour to mothers' team sports participation with young children but faces limitations. Despite reminders, the dropout rate of 53.7 % in the second survey compromises the study's reliability. Notably, mothers who did not complete time two had a longer absence from team sports, suggesting potential attrition bias. This reduces the generalisability of the findings, particularly for mothers with extended periods away from team sports, limiting the study's informative value. Reliance on self-report measures may have been impacted by bias responses. Whilst randomisation and anonymity were employed to reduce these impacts, self-report was the most appropriate choice given the online format.[24] Additionally, the study only assessed team sports engagement over the past fortnight, which might not have accounted for disruptions in sporting seasons over the previous three years (e.g., extreme weather, the COVID-19 pandemic, and sport participation restrictions) that could have affected participants' engagement and may not fully represent their actual engagement. Whilst our current model explains a significant portion of the variance in team sports engagement, there remains unexplained variance, indicating the presence of additional influential factors. Future research should focus on identifying such variables (e.g., birth trauma[37] or postnatal depression[38]) or using an alternative theory (e.g., trans-contextual model of motivation[39]) that may provide a more comprehensive understanding of mothers' engagement levels. Furthermore, the current study would have benefited from comparing mothers who have different engagement levels to offer deeper insights into the factors impacting participation. Moreover, whilst no information was collected on re-engagement in individual sports or general physical activity, exploring these areas would be a profitable avenue for future research and comparative analyses.

5. Conclusion

This study explored the psychosocial factors that influence a mother's engagement in team sports using an extended theory of planned behaviour. Subjective norms emerged as the most important predictor of intention, whilst intention was the most important predictor of engagement. Social support moderated the relationship between intention and behaviour, facilitating engagement as mothers transitioned from low to high levels of intention. To enhance team sports engagement for mothers, future research could consider incorporating subjective norm messages, implementation intentions and support from important others into theory-based interventions. Implementing these interventions across communities may allow mothers with young children to experience the physical, mental, and social benefits of team sport.

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Confirmation of ethical compliance

The current study was approved by the Human Research and Ethics Committee of the University of Wollongong (Ethics Number: 2022/099).

CRediT authorship contribution statement

E.R.A. contributed to the formulation of ideas and was the primary writer and conducted all analyses. C.L. and S.A.V. contributed to the formulation of ideas and proof reading and editing of the manuscript.

Declaration of interest statement

None.

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