

2014

Children's enjoyment of play during school lunchtime breaks: an examination of intraday and interday reliability

Brendon P. Hyndman
Charles Darwin University

Amanda C. Benson

Shahid Ullah

Caroline F. Finch
Federation University

Amanda Telford
RMIT University

Publication details

Postprint of: Hyndman, B, Benson, AC, Ullah, S, Finch, CF & Telford, A 2014, 'Children's enjoyment of play during school lunchtime breaks: an examination of intraday and interday reliability', *Journal of Physical Activity & Health*, vol. 11, no. 1, pp. 109-117.

Published version available from:

<http://dx.doi.org/10.1123/jpah.2011-0200>

Children's enjoyment of play during school lunchtime breaks:

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Original Research

Key words: Child, Schools, Health Surveys, Play and enjoyment

Abstract word count: 200

Manuscript word count: 5,555

Manuscript submission date: 27 June, 2012

1 **Abstract**

2 **Background:** Enjoyment and play during school lunchtime are correlated with children's physical
3 activity. Despite this, there is an absence of studies reporting children's enjoyment of play during
4 school lunchtime breaks. The purpose of this study was to examine the intra-day and inter-day
5 reliability of children's enjoyment of school lunchtime play. **Methods:** Surveys used to assess
6 children's enjoyment of lunchtime play were distributed to and completed by 197 children (112
7 males, 85 females), aged 8-12 years attending an elementary school in Victoria, Australia. Children
8 completed the surveys during class before lunch (expected enjoyment) and after lunch (actual
9 enjoyment) for five days. The intra- and inter-day enjoyment of school lunchtime play reliability
10 were determined using a weighted kappa. **Results:** Intra-day kappa values ranged from fair (0.31) to
11 substantial (0.75) within each of the five days (median kappa=0.41). In comparison, 'expected' (0.09-
12 0.40; median 0.30) and 'actual' (0.05-0.46; median 0.28) inter-day enjoyment of lunchtime play
13 displayed low reliability. **Conclusions:** Children's enjoyment of lunchtime play appears to be more
14 consistent within days than across days. The findings suggest that assessment of children's enjoyment
15 of lunchtime play once on a single day would be representative of a particular day but not necessarily
16 that particular school week.

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1 **Background**

2 The development of healthy lifestyle behaviours early in life is important. Childhood is a crucial time
3 to develop activity habits that can prevent potential health consequences associated with a sedentary
4 lifestyle in adulthood.¹ Schools have been identified as a major setting for providing children with
5 physical activity opportunities such as physical education, sport programs, after school activities and
6 play during school breaks.^{2,3} However, there are a number of barriers to implementing physical
7 education effectively and in most countries physical education doesn't provide sufficient physical
8 activity for children to meet national physical activity guidelines.⁴⁻⁶ With school curricular time
9 devoted to children and adolescents' physical education declining,^{7,8} and to reduce the burden on
10 schools to provide physical education, sport and after school activity programs, there is an increasing
11 trend towards schools facilitating children's physical activity via non-curricular avenues such as play
12 during school breaks.⁹⁻¹² Play during school breaks is now recognised as the major source for
13 children's daily physical activity,¹²⁻¹⁴ contributing up to 50% of children's recommended daily
14 physical activity. Evidence suggests children spend up to 35% of school breaks engaged in moderate
15 to vigorous physical activity (MVPA).⁸ With children reported to be spending approximately 30 hours
16 per week at school,⁸ access and opportunities for physical activity during periods other than school
17 breaks are limited, therefore developing a greater understanding of children's play during school
18 lunchtime is vital.

19
20 An essential element of tailoring physical activity interventions to target children requires
21 identification of key psychosocial correlates that may explain behaviour change.¹⁵ Children's physical
22 activity behaviour can include active play,¹⁶ structured sport,¹⁷ physical education¹⁸ and active
23 transport.¹⁹ Literature reviews have consistently identified exercise motivation, social support and self
24 efficacy as key psychosocial correlates of physical activity^{15,20} and suggest further investigation into
25 the psychosocial correlates of children and adolescent physical activity is warranted.^{15,20,21} More
26 recently, research has examined the association between the psychosocial correlate 'enjoyment' and
27 children's physical activity.²²⁻²⁴ The connection between enjoyment and behavior change can be
28 explained by the Self-Determination Theory (SDT) which outlines that if behavior such as physical

1 activity is motivated by intrinsic factors (e.g. experiencing enjoyment after exercise) physical activity
2 participation is more likely to be sustained than via extrinsic factors (e.g. obtaining rewards).²⁵
3 Enjoyment has been shown to be positively correlated with children's motivation for involvement,²²
4 and sustained participation in sport²² and physical activity.^{23,24} There are numerous developmental,
5 physical and psychological benefits associated with an active lifestyle, however a 'lack of enjoyment'
6 has been identified as a potential determinant of declining participation in physical activity.²⁶ Similar
7 to the Self-Determination Theory, The Youth Physical Activity Promotion (YPAP) model proposed
8 by Welk suggests that if children enjoy participating in particular activities, they are more likely to
9 engage in and maintain participation in those activities.²⁷ Enjoyment is derived intrinsically via
10 kinaesthetic experiences and achievement of personal goals and extrinsically via social recognition
11 and comparative achievement.²⁸ Researchers define enjoyment of physical activity as "a positive
12 affective response to an experience that reflects generalized feelings such as pleasure, liking, and fun
13 (p.32)."²⁸ Therefore, with so many experiences encountered by children from day to day, psychosocial
14 influences on behaviour such as enjoyment are an important consideration when assessing the
15 physical activity and health behaviour of children and adolescents.

16

17 Recent studies have explored the intra²⁹⁻³¹ and inter-day patterns³²⁻³⁴ of children's physical activity
18 across multiple school days. However, none of these studies considered children's enjoyment levels.
19 Determining the consistency of children's enjoyment of lunchtime play within and between school
20 days may provide evidence for health professionals and researchers of the frequency of measurement
21 necessary to provide a representative assessment of children's enjoyment of lunchtime play. To our
22 knowledge, no study has previously reported children's enjoyment levels of school lunchtime play or
23 age/sex-specific enjoyment of lunchtime play variability. The question of whether children's
24 enjoyment of lunchtime play is representative of other school days is currently unknown. The
25 purposes of the present study were to (i) examine children's enjoyment of play during school lunch
26 time; (ii) examine the intra- and inter-day reliability of children's enjoyment of playing at lunchtime
27 and (iii) examine the age and sex-specific intra- and inter-day variability of children's enjoyment of
28 lunchtime play.

1 **Methods**

2 During the pilot study, survey cards were administered to 107 grade 3-6 children (aged 8-12 years) in
3 two elementary schools from regional Victoria. Children reported little concern or difficulty when
4 using the small survey cards, therefore no changes were necessary for the current study which
5 assessed enjoyment of lunchtime play. As children's cognitive capabilities are developing during
6 elementary school,³⁵ the suitability of the survey cards for children aged under 10 years was deemed
7 acceptable based on feedback from elementary school teachers after the initial pilot study.
8 Additionally, face validity of the small survey card was reviewed by five physical activity experts
9 with experience in the development of self-report measures. Three of the experts had both an
10 education (former teachers) and physical activity research background and looked at the questions for
11 age-appropriateness within the survey card. Two of the experts were teachers who looked at the
12 questions for developmental appropriateness for the age group. In addition to the expert review,
13 readability was also assessed by conducting a pilot test with a group of 15 children aged 8-12 years.
14 As a result of the pilot test, a minor change of underlining key words was implemented based on the
15 questions children asked. The final readability of the enjoyment of lunchtime play survey cards were
16 assessed using seven readability formulas via an online tool that indicated the instrument could be
17 easily read by 8-9 year olds.³⁶

18
19 Within the current study enjoyment of lunchtime play survey cards were administered to 197 children
20 aged 8-12 years (112 males, 85 females) from a large government elementary school in regional
21 Victoria, Australia. All grade 3 to 6 children were invited to participate in the study during Winter
22 (June) in school Term 2, 2010 (response rate: 60.8%). Children's 'expected' (before lunch) and
23 'actual' (after lunch) enjoyment of lunchtime play were measured and compared on each day over a
24 five day period (35.9% missing responses). Completion of the survey cards took approximately 20
25 seconds and required children to circle on a five point likert pictorial scale how much they expected to
26 enjoy lunchtime play or how much they actually enjoyed lunchtime play. The enjoyment item was
27 rated on a five-point likert scale from very unhappy (1) to very happy (5). The card also recorded the
28 student name, grade and day of the week. Demographic details such as the child's age and sex were

1 collected from a larger survey as part of the same research project being conducted at the elementary
2 school. Students generally had no difficulties completing the questionnaire, only 2-3 students per class
3 asked for clarification. Two students who required assistance reading the survey card had been
4 previously identified as having learning disabilities, therefore their data were excluded from the
5 analyses.

6
7 Playground features of the elementary school included a courtyard, basketball court, synthetic
8 surfaced ball area, large grass oval, rain and sun sheltered playground (including monkey bars, slide,
9 wooden bridge), painted court markings (e.g. hopscotch) and a large grass area with many trees and
10 large rocks at the front of the school. Sports equipment that was made available for the children
11 during lunchtime included balls, bats, hoops and skipping ropes.

12
13 Ethical approval for the study was obtained from the University Human Research Ethics Committee,
14 the Department of Education and Early Childhood Development in Victoria (DEECD) and permission
15 was gained from the school principal. Children and their parents received a plain language statement
16 outlining the research, along with a participant and parental consent form.

17
18 Intra-day and inter-day reliability (including age & sex-specific reliability) of children's enjoyment of
19 lunchtime play were calculated using a Weighted Kappa (k_w^2) statistic for ordinal items.³⁷ Kappa
20 values were graded as slight agreement (0.01-0.20), fair agreement (0.21-0.40), moderate agreement
21 (0.41-0.60), substantial agreement (0.61-0.80) and almost perfect agreement (0.81-0.99).³⁷ The 95%
22 confidence intervals of weighted kappa were based on the empirical sampling distribution generated
23 by the computer intensive bias corrected bootstrapping re-sampling method.³⁸ The Z statistic, which
24 follows standard normal distribution with mean 0 and variance 1, was used to compare the level of
25 reliability between sex and age groups.³⁹ The values were set at a 5% level of significance. The
26 Statistical Package for Social Sciences (SPSS) version 18 (SPSS Inc., Chicago, USA) was used to
27 calculate the descriptive statistics and R version 2.12.0 (R Development Core Team, Vienna, Austria)

1 was used for the weighted kappa statistics, 95% confidence intervals (CI) and reliability comparisons
2 using Z statistic.

4 **Results**

5 Overall, both 'expected' and 'actual' enjoyment of lunchtime play was rated as very high or high
6 (Table 1). Table 1 presents the intra-day reliability for the enjoyment of lunchtime play between
7 school day one (Wednesday, week one) to school day five (Tuesday, week two). Monday displays
8 substantial kappa agreement, Wednesday and Friday display moderate kappa agreement and Tuesday
9 and Thursday display fair kappa agreement, between expected and actual enjoyment of lunchtime
10 play scores. A decrease in the percentage of enjoyment of lunchtime play was evident from before
11 lunch (expected play enjoyment) to after lunch (actual play enjoyment) across all days. Age and sex-
12 specific intra-day variability in enjoyment of lunchtime play data is also presented (Table 2). Intra-day
13 variability was only significantly different between sexes on Monday (Day 4 of 5), ($Z = 3.66$; $p <$
14 0.001). Monday displayed the highest kappa agreement score for males (almost perfect agreement)
15 and the lowest kappa agreement score for females (fair agreement). Although the intra-day variability
16 was not significantly different on Wednesday, the highest agreement is displayed for females
17 (moderate agreement) and the lowest kappa agreement for males (fair agreement). There were no
18 significant differences in kappa scores between age groups, however the greatest differences in kappa
19 agreement were evident for Tuesday ($Z = 1.71$; $p = 0.09$) and Thursday ($Z = 1.01$; $p = 0.31$). Kappa
20 agreement scores were highest for both age groups on Monday ($Z = 0.24$; $p = 0.81$).

21
22 Inter-day reliability of children's enjoyment of lunchtime play results (Table 2) indicate 'expected'
23 enjoyment of lunchtime play between each of the five days failed to reach moderate kappa agreement,
24 ranging from 0.09 to 0.40 (median kappa=0.30). Similarly low 'actual' inter-day reliability scores for
25 enjoyment of lunchtime play were identified, ranging from 0.05-0.46 (median kappa=0.28). The
26 lowest 'expected' inter-day reliability was between Wednesday and Monday (slight agreement) and
27 the highest 'expected' inter-day reliability was between Monday and Friday (fair agreement). In
28 contrast, the lowest 'actual' inter-day reliability was identified between Tuesday and Wednesday

1 (slight agreement) and the highest 'actual' inter-day reliability was identified between Wednesday and
2 Friday (moderate agreement). No significant differences were identified for age or sex-specific inter-
3 day comparisons (including 79% (63/80) of inter-day comparisons failing to reach moderate
4 reliability), therefore age and sex-specific inter-day lunchtime play enjoyment comparisons are not
5 presented.

6
7 The mean maximum temperature for the five days was 11.2°C, ranging from 9.6°C on day two
8 (Thursday, week one) to 12.4°C on day five (Tuesday, week two). Minimum temperatures were all
9 <2°C for all days except day two (Thursday, week one), which reached 7.2°C.⁴⁰ The mean rainfall
10 was 2.2mm, ranging from 1.2mm on day four (Monday, week two) to 5.2mm on day three (Friday,
11 week one). No rainfall was recorded on both day one (Wednesday, week 1) and day five (Tuesday,
12 week 2).⁴⁰ These are usual temperatures for the area at this time of year.⁴⁰

13

14 **Discussion**

15 Play during school lunchtime breaks is crucial for children's development of cognitive, physical,
16 social and emotional well-being^{16,41} and play has been acknowledged by the United Nations High
17 Commission for Human Rights as an entitlement for every child.⁴² School lunchtime breaks provide
18 children with an avenue to engage in unstructured active play to build active, healthy bodies and
19 develop decision making, negotiating and motor skills.¹⁶ Ultimately, the more positive responses (e.g.
20 enjoyment) children experience via active play through avenues such as unstructured school
21 lunchtime breaks the more likely children will adopt an active lifestyle and minimize the adoption of
22 sedentary behaviours.¹⁶ More research relating to predisposing factors of physical activity such as
23 enjoyment²⁷ and their associations with play during school lunchtime are needed.¹² Measuring
24 children's self-reported enjoyment of school lunchtime experiences may reflect the quality of the
25 school play environment. A greater understanding of children's enjoyment of play within the school
26 context is an important consideration in future evaluations of interventions designed to improve or
27 change play environments.^{43,44} Many studies investigating enjoyment did not consider the extent to
28 which measuring enjoyment may vary within and between school days. No study we are aware of has

1 assessed children's enjoyment of lunchtime play, however instruments have been developed to
2 measure children's enjoyment of being physically active in general^{24,43,44} and leisure activities.⁴⁵
3
4 Previous physical activity literature would indicate that the high levels of 'expected' and 'actual'
5 enjoyment of lunchtime play from this study could be correlated with high physical activity
6 participation.^{24,25} A number of studies have recognised the positive association between children's
7 enjoyment of physical activity and participation.⁴⁶⁻⁴⁸ Studies have identified associations between
8 enjoyment and correlates of physical activity including self-determination,⁴⁹ motor skill proficiency,⁵⁰
9 task orientation,⁵¹ self-efficacy,⁵² goal setting,⁵² and perceived competence.⁵¹ Physical activity
10 interventions have also targeted enjoyment as a key psychosocial mediator of behavioural
11 changes.^{24,53} Positive correlations exist between children's enjoyment of physical activity and
12 participation,^{23,24} yet little is known about children's enjoyment of play during school lunchtime
13 breaks, a major source of children's physical activity, both on a single day and across days of the
14 week.⁵⁴ Future research investigating correlations between children's enjoyment of lunchtime play and
15 physical activity participation is therefore warranted. This study identified high levels of children's
16 enjoyment of lunchtime play among a large sample of elementary school children. Given the concerns
17 regarding the declining levels of physical activity among adolescents^{55,56} it may be beneficial to
18 examine adolescents' enjoyment of school breaks within a secondary school context.

19
20 As this is the first study of its kind, we acknowledge that future research should be conducted to
21 further identify patterns of children's enjoyment of lunchtime play. In addition, future research is
22 needed to identify the sources and influences of children's enjoyment of lunchtime play. A limitation
23 of the study was the high number of missing responses across the five days, however as the research
24 was conducted within a usual school environment children are absent from school throughout a week
25 for a variety of reasons. It should also be noted that because the research was conducted within a
26 single elementary school, any generalizing of findings are not necessarily representative of the wider
27 population.

28

1 Examination of children's intra-day and inter-day enjoyment of lunchtime play suggests that
2 children's expected and actual enjoyment of lunchtime play is relatively consistent within a single
3 day. However, reliability is lower when comparing children's enjoyment scores of lunchtime play
4 across multiple school days. The higher reliability of children's enjoyment of lunchtime play within a
5 single day may suggest that multiple influences on children's enjoyment within a single school day
6 may cause less variation than across multiple school days. Alternatively it could also mean children
7 can easily remember what their expected enjoyment was when rating their actual enjoyment,
8 potentially biasing the response.

9
10 A theoretical framework that could explain the variation in enjoyment from day to day is the social-
11 ecological model.⁵⁷ The social-ecological model indicates that multiple influences such as
12 intrapersonal (individual), interpersonal (social), physical environment and policy factors within a
13 setting can be modified and affect children's behaviour.⁵⁷ Intrapersonal influences on behaviour
14 includes changes in an individual student's mood; interpersonal influences include variation in family
15 circumstances, behaviour and mood of teachers/peers; physical environment influences include
16 variation in climatic conditions, children's access and availability of play spaces/activities and policy
17 influences may include different/quantity of teachers supervising the playground, changes to rules and
18 access to sports and play equipment or play area allocation by year level. With so many potential
19 influences on children's behaviour from day to day, these factors could be major factors contributing
20 to the low kappa values between days (including 79% of age and sex-specific inter-day kappa
21 comparisons failing to reach moderate reliability).

22
23 The higher reliability for enjoyment of lunchtime play at the beginning of the study (Wednesday,
24 Week 1) and at the beginning of a school week (Monday, Week 2) may reflect that reliability
25 decreases when self-report measures are repeated each day. Children had completed the enjoyment of
26 lunchtime play survey card for the first time on the Wednesday and on the Monday children had
27 experienced the weekend break. In contrast, when the administration of the survey cards were
28 repeated the day after the start of the study and school week, on the Thursday (Week 1) and Tuesday

1 (Week 2), the intra-day reliability dropped from substantial and moderate reliability to a fair level.

2 Although intra-day reliability for Friday (Week 1) was moderate, the findings suggest that reliability
3 may be increased if administration of the self-report is spaced out over time, rather than repeating
4 each day.

5

6 It should be acknowledged that the lower intra-day reliability (fair) of lunchtime enjoyment scores on
7 the final day (Tuesday) could be attributed to five days being too many days of repeated measures.

8 Thursday (Day 2) could also have been affected by the cooler weather (maximum temperature
9 $<10^{\circ}\text{C}$), as the mean maximum temperature for the other four days was 11.7°C ($\text{sd}=0.76$).

10 Temperature variation has been found to influence children's physical activity^{12,58} and this could also
11 be the case for correlates of physical activity such as enjoyment of play. In addition, it should also be
12 noted that lower percentages of 'actual' enjoyment of play after lunch may suggest children could be
13 more optimistic about enjoying lunchtime play before lunchtime commences. This would be due to
14 children being unable to predict or take into account potential influences on their play that can occur
15 during lunchtime breaks that may affect their level of enjoyment.

16

17 The greatest intra-day kappa score differences between males and females earlier in the week could
18 indicate that administering self-report measures earlier in the school week may detect greater sex
19 differences than later in the school week. This is reinforced by a significant kappa score difference
20 between males and females for Monday (day four). Before children experience the demands of
21 different subjects, homework and other school commitments of the school week, children could be
22 taking more time and be more specific when rating the enjoyment of lunchtime play survey, resulting
23 in the sex differences in kappa scores being more identifiable. Another possibility could be due to
24 Monday (day four) and Tuesday (day five) being the final two days of the study and having completed
25 repeated measures over the previous three days may have resulted in one of the sex's being less
26 accurate in self-reporting their enjoyment of lunchtime play during the fourth and fifth days of survey
27 administration. In other words, the boys quite simply may have been 'over it!' Evidence also suggests
28 males and females participate in and prefer different physical activities⁵⁹ and behavior⁶⁰ during school

1 lunchtime play, which could have influenced sex-specific differences in kappa agreement.
2 Interestingly, female enjoyment scores were most reliable and males were least reliable during the
3 start of the study (Wednesday/Day one) between 'expected' and 'actual' enjoyment of lunchtime play.
4 In contrast, male enjoyment of lunchtime play scores contained 'almost perfect' reliability at the start
5 of the school week (Monday/Day four), the day in which females possessed their lowest reliability
6 (fair agreement) between 'expected' and 'actual' enjoyment of lunchtime play.

7
8 An important finding from the study was the similar kappa agreement scores between the 8-9 and 10-
9 12 year old age groups. Although previous research that has examined enjoyment of sport and
10 physical activity suggests that children's sources of enjoyment varies with age,²³ reliability
11 comparisons between the age groups were relatively consistent. Similar to the males, both age groups
12 possessed enjoyment of lunchtime play scores that displayed very high reliability on Monday
13 (substantial agreement) and the high intra-day reliability for both age groups on Monday may suggest
14 that administering self-report enjoyment measures on a Monday could strongly represent enjoyment
15 of play throughout that school day.

16
17 This is the first study we are aware of to examine the intra-day and inter-day reliability of enjoyment
18 of lunchtime play. There is a lack of consensus as to how many days of measurement are required to
19 assess children's enjoyment of lunchtime, therefore a typical school week (five days) was chosen. The
20 moderate intra-day reliability of enjoyment of lunchtime play for three out of five school days
21 suggests that assessing children's enjoyment of play after lunch would be representative of enjoyment
22 of lunchtime play on that particular day, but not necessarily that school week. It should be
23 acknowledged this study relied on children under 12 years of age accurately predicting and recalling
24 enjoyment play during school lunchtime. Concerns have previously been raised about using self-
25 report instruments with elementary aged children,³⁵ however we minimized this potential
26 complication by piloting the survey cards and by considering the format of the questionnaire and
27 employing the use of a pictorial scale using developmentally appropriate images of smiley faces.⁶¹

28

1 While we were able to identify the intra and inter-day reliability between actual and predicted
2 lunchtime enjoyment and our field notes suggest active play occurred during lunchtime; future studies
3 should consider objectively measuring the type and duration of the play activities undertaken during
4 the lunch period. Given that current literature has demonstrated a relationship between physical
5 activity participation and enjoyment^{23,24} this would enable additional analysis to be conducted on the
6 relationship between the type and intensity of the play and children's predicted and actual enjoyment
7 of the lunchtime activity.

8

9 **Conclusion**

10 In summary, this research addresses a significant gap in the literature by examining the reliability of
11 children's enjoyment of lunchtime play across multiple days. The level of reliability between
12 children's 'expected' and 'actual' enjoyment of lunchtime play scores reached at least moderate
13 agreement for most days. This acceptable agreement within most of the school days suggests that
14 measuring children's 'expected' or 'actual' enjoyment of lunchtime play is likely to represent that
15 particular school day. In contrast, only a very small proportion of inter-day comparisons for
16 enjoyment of lunchtime play reached a moderate level of reliability. This may indicate that factors
17 influencing children's experiences from day to day may affect the variation of enjoyment scores on
18 other school days and therefore may not necessarily be representative of children's enjoyment of
19 lunchtime play across different days of the week. Generally, children expected to enjoy lunchtime
20 play in greater proportions than they actually did, indicating children expect to have a positive
21 experience during their school lunchtime play. The findings suggest that age didn't appear to affect
22 the reliability of enjoyment scores in the sample surveyed, however sex can be an influential factor on
23 the overall reliability of a group's enjoyment of lunchtime play.

24

25 **Practical implications**

- 26 • The reliability of children's enjoyment of lunchtime play within a single day suggests that
27 measurement once on a single day would be representative of that particular day but not
28 necessarily that school week.

- 1 • The findings suggest that future physical activity interventions targeting school lunch periods
2 should consider spacing out the assessment of enjoyment across multiple days.

3

4 **Acknowledgements**

5 We thank the regional elementary school for enabling us to invite their students to participate and the
6 students for their involvement in the study. The data collection process for this research was
7 conducted whilst Associate Professor Amanda Telford and Brendon Hyndman were based at the
8 University of Ballarat. The write up of this research was conducted at RMIT University. We would
9 also like to acknowledge Professor Geraldine Naughton for suggesting the concept for this research.
10 Professor Caroline Finch is supported by a National Health and Medical Research Council Principal
11 Research Fellowship. The Australian Centre for Research into Injury in Sport and its Prevention
12 (ACRISP) is one of the International Research Centres for Prevention of Injury and Protection of
13 Athlete Health supported by the International Olympic Committee (IOC).

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Table 1: Intra-day reliability including age and sex-specific intra-day variability (weighted kappa (95% CI) of children’s enjoyment of school lunchtime play.

	‘Expected’ Enjoyment of Lunchtime Play			‘Actual’ Enjoyment of Lunchtime Play			Intra-day variability (weighted kappa (95%CI))								
							Sex				Age				Intra-day Reliability
Day	VH/H %	NS %	VU/U %	VH/H %	NS %	VU/U %	Male (Weighted Kappa (95% CI))	Female (Weighted Kappa (95% CI))	Z	P Value [†]	8-9 Years (Weighted Kappa (95% CI))	10-12 Years (Weighted Kappa (95% CI))	Z	P Value [†]	Overall
Wednesday (1)	94.7	4.3	1.0	88.1	6.7	5.2	0.27 (-0.05–0.59)	0.55 (0.19 – 0.91)	1.17	0.24	0.54 (0.14 – 0.94)	0.40 (0.08 – 0.73)	0.51	0.61	0.49 (0.15-0.76)
Thursday (2)	93.0	5.4	1.6	91.7	4.8	3.5	0.29 (0.07 – 0.52)	0.34 (0.01 – 0.67)	0.22	0.83	0.40 (0.18 – 0.63)	0.22 (-0.04 – 0.49)	1.01	0.31	0.31 (0.11-0.50)
Friday (3)	89.9	7.2	2.9	84.7	6.5	8.8	0.42 (0.09 – 0.76)	0.37 (0.02 – 0.72)	0.21	0.84	0.45 (0.10 – 0.80)	0.33 (-0.02 – 0.67)	0.48	0.63	0.41 (0.17-0.66)
Monday (4)	93.9	3.0	3.1	89.8	6.1	4.1	0.87 (0.76 – 0.98)	0.32 (0.05 – 0.60)	3.66	<0.001*	0.71 (0.49 – 0.93)	0.77 (0.40 – 0.98)	0.24	0.81	0.75 (0.50-0.90)
Tuesday (5)	95.5	3.6	0.9	86.2	7.6	6.2	0.28 (0.08 – 0.48)	0.36 (0.26 – 0.46)	0.72	0.47	0.24 (0.07 – 0.40)	0.42 (0.29 – 0.56)	1.71	0.09	0.32 (0.21-0.44)

CI= confidence interval; Day 1-5 represents the order of testing with the first day of testing beginning on a Wednesday

Z= Standard Normal variate; † P value from the standard normal test (Z test); CI= confidence interval; *= Significant difference

VH/H= Very Happy/Happy; NS= Not Sure; VU/U= Very Unhappy/Unhappy

Table 2: Inter-day reliability of children’s enjoyment of school lunchtime play. The upper panel shows the ‘expected’ and the lower panel shows the ‘actual’ enjoyment of lunchtime play.

Weighted Kappa (95% CI)				
Wednesday (1)	-	-	-	-
0.35 (0.10 - 0.57)				
0.25 (0.06 - 0.43)	Thursday (2)	-	-	-
0.10 (-0.09- 0.36)	0.37 (0.15 - 0.57)	Friday (3)	-	-
0.46 (0.20 - 0.70)	0.19 (-0.02 - 0.49)			
0.09 (-0.10 - 0.30)	0.33 (0.08 - 0.55)	0.40 (0.17 - 0.62)	Monday (4)	-
0.14 (-0.08 - 0.41)	0.09 (-0.06 - 0.30)	0.44 (0.10 - 0.72)		
0.16 (0.01 - 0.31)	0.28 (0.19 - 0.39)	0.27 (0.14 - 0.44)	0.31 (0.19 - 0.56)	Tuesday (5)
0.05 (-0.10 - 0.28)	0.30 (0.07 - 0.53)	0.37 (0.11 - 0.65)	0.41 (0.09 - 0.71)	

CI= confidence interval; Day 1-5 represents the order of testing with the first day of testing beginning on a Wednesday