

Age 11	79.56 ^b .90** ^a Good
Age 12	62.81 ^c .84** ^a Moderate
Age 13	73.21 ^b .88** ^a Good
Age 14	68.43 ^b .88** ^a Good
Age 15	76.08 ^b .97** ^a Good
Age 16	72.27 ^b .93** ^a Good
Age 17	71.65 ^b .95** ^a Good
Age 18	76.20 ^b .84** ^a Good
Age 19	87.31 ^a .89** ^a Very good
Age 20	89.70 ^a .96** ^a Very good
Age 21	88.39 ^a .96** ^a Very good

Age 22	91.01 ^a .90** ^a Very good
Age 23	86.68 ^a .90** ^a Very good
Age 24	75.15 ^b .90** ^a Good
Age 25	88.89 ^a .93** ^a Very good
Age 26	81.39 ^a .84** ^a Very good
Age 27	77.41 ^b .99** ^a Good
Total cumulative hours	68.49 ^b .90** ^a Good

Physical preparation activities

Completed in a group under the direct supervision of a coach/specialised instructor

Age at first participation	74.15 ^b .54** ^c Good
Hours per year	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good

Age 7	100.00 ^a 1.00** ^a Very good
Age 8	95.00 ^a .00 ^d Very good
Age 9	95.00 ^a .00 ^d Very good
Age 10	95.00 ^a .00 ^d Very good
Age 11	95.00 ^a .00 ^d Very good
Age 12	85.00 ^a .00 ^d Very good
Age 13	84.58 ^a .43* ^d Very good
Age 14	78.56 ^b .32 ^{†d} Good
Age 15	72.10 ^b .56** ^c Good
Age 16	65.60 ^b .48* ^d Good
Age 17	75.37 ^b .13 ^d Good

Age 18	84.29 ^a .95** ^a Very good
Age 19	87.09 ^a .94** ^a Very good
Age 20	83.49 ^a .93** ^a Very good
Age 21	73.61 ^b .55 ^{†c} Good
Age 22	84.72 ^a .12 ^d Very good
Age 23	70.31 ^b .06 ^d Good
Age 24	68.45 ^b .57 ^{†c} Good
Age 25	83.20 ^a .63* ^c Very good
Age 26	51.53 ^c .33 ^d Poor
Age 27	80.40 ^a .61 ^{†c} Very good
Total cumulative hours	52.45 ^c .57** ^c Poor

Completed one-on-one with a coach/specialised instructor

Age at first participation	94.64 ^a	
	.42* ^d	
	Very good	
Hours per year		
Age 5	100.00 ^a	
	1.00** ^a	
	Very good	
Age 6	100.00 ^a	
	1.00** ^a	
	Very good	
Age 7	100.00 ^a	
	1.00** ^a	
	Very good	
Age 8	100.00 ^a	
	1.00** ^a	
	Very good	
Age 9	100.00 ^a	
	1.00** ^a	
	Very good	
Age 10	100.00 ^a	
	1.00** ^a	
	Very good	
Age 11	100.00 ^a	
	1.00** ^a	
	Very good	
Age 12	100.00 ^a	
	1.00** ^a	
	Very good	
Age 13	95.00 ^a	
	.00 ^d	
	Very good	
Age 14	96.67 ^a	
	.60** ^c	
	Very good	

Age 15	96.49 ^a .60** ^c Very good
Age 16	96.30 ^a .60** ^c Very good
Age 17	94.12 ^a .70** ^b Very good
Age 18	100.00 ^a 1.00** ^a Very good
Age 19	100.00 ^a 1.00** ^a Very good
Age 20	100.00 ^a 1.00** ^a Very good
Age 21	100.00 ^a 1.00** ^a Very good
Age 22	100.00 ^a 1.00** ^a Very good
Age 23	100.00 ^a 1.00** ^a Very good
Age 24	100.00 ^a 1.00** ^a Very good
Age 25	100.00 ^a 1.00** ^a Very good

Age 26	100.00 ^a 1.00** ^a Very good
Age 27	100.00 ^a 1.00** ^a Very good
Total cumulative hours	89.67 ^a .40* ^d Very good
Completed with others but without a coach/specialised instructor	
Age at first participation	83.73 ^a .68** ^b Very good
Hours per year	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	100.00 ^a 1.00** ^a Very good
Age 9	100.00 ^a 1.00** ^a Very good
Age 10	100.00 ^a 1.00** ^a Very good
Age 11	100.00 ^a 1.00** ^a Very good

Age 12	100.00 ^a 1.00** ^a Very good
Age 13	96.88 ^a .66** ^b Very good
Age 14	95.00 ^a .00 ^d Very good
Age 15	89.47 ^a .00 ^d Very good
Age 16	87.31 ^a .37** ^d Very good
Age 17	89.18 ^a .64** ^c Very good
Age 18	83.29 ^a .29 ^d Very good
Age 19	80.77 ^a .68** ^b Very good
Age 20	81.94 ^a .89** ^a Very good
Age 21	75.93 ^b .85** ^a Good
Age 22	87.04 ^a .97** ^a Very good

Age 23	85.42 ^a
	.97** ^a
Age 24	Very good
	62.08 ^c
Age 25	.73* ^b
	Moderate
Age 26	70.95 ^b
	.86** ^a
Age 27	Good
	48.06 ^d
Total cumulative hours	-.32 ^d
	Poor
Individual	88.19 ^a
	.82** ^a
Age at first participation	Very good
	72.67 ^b
Hours per year	.88** ^a
	Good
Age 5	63.01 ^c
	.93** ^a
Age 6	Moderate
	100.00 ^a
Age 7	1.00** ^a
	Very good
Age 8	100.00 ^a
	1.00** ^a
	Very good
	100.00 ^a
	1.00** ^a
	Very good

Age 9	100.00 ^a 1.00** ^a Very good
Age 10	100.00 ^a 1.00** ^a Very good
Age 11	100.00 ^a 1.00** ^a Very good
Age 12	100.00 ^a 1.00** ^a Very good
Age 13	95.00 ^a .00 ^d Very good
Age 14	80.00 ^a -.04 ^d Very good
Age 15	75.44 ^b .07 ^d Good
Age 16	61.11 ^c -.17 ^d Poor
Age 17	74.51 ^b -.06 ^d Good
Age 18	84.07 ^a .80** ^a Very good
Age 19	89.42 ^a .75** ^b Very good

Age 20	80.21 ^a .64** ^c Very good
Age 21	84.72 ^a .74** ^b Very good
Age 22	95.83 ^a .90** ^a Very good
Age 23	97.50 ^a .98** ^a Very good
Age 24	72.50 ^b .39 ^d Good
Age 25	85.48 ^a .88** ^a Very good
Age 26	53.06 ^c .01 ^d Poor
Age 27	69.72 ^b .11 ^d Good
Total cumulative hours	54.59 ^c .83** ^a Moderate
Overall	
Age at first participation	84.20 ^a .94** ^a Very good
Hours per year	
Age 5	100.00 ^a 1.00** ^a Very good

Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	95.00 ^a .00 ^d Very good
Age 9	95.00 ^a .00 ^d Very good
Age 10	95.00 ^a .00 ^d Very good
Age 11	95.00 ^a .00 ^d Very good
Age 12	85.00 ^a .00 ^d Very good
Age 13	73.65 ^b .39 ^d Good
Age 14	70.43 ^b .49** ^d Good
Age 15	71.06 ^b .45* ^d Good
Age 16	61.69 ^c .36 ^{†d} Poor

Age 17	75.46 ^b .34 ^{† d} Good
Age 18	79.93 ^b .91** ^a Good
Age 19	91.67 ^a .97** ^a Very good
Age 20	90.33 ^a .96** ^a Very good
Age 21	82.65 ^a .82** ^a Very good
Age 22	87.17 ^a .82** ^a Very good
Age 23	80.22 ^a .81** ^a Very good
Age 24	72.52 ^b .85** ^a Good
Age 25	79.47 ^b .82** ^a Good
Age 26	62.69 ^c .13 ^d Poor
Age 27	83.24 ^a .78** ^b Very good

Total cumulative hours	49.75 ^d
	.89** ^a
	Poor

Mental preparation activities

Completed in a group under the direct supervision of a coach/specialised instructor

Age at first participation	75.77 ^b
	.40* ^d
	Good

Hours per year

Age 5	100.00 ^a
	1.00** ^a
	Very good

Age 6	100.00 ^a
	1.00** ^a
	Very good

Age 7	100.00 ^a
	1.00** ^a
	Very good

Age 8	100.00 ^a
	1.00** ^a
	Very good

Age 9	100.00 ^a
	1.00** ^a
	Very good

Age 10	95.00 ^a
	.00 ^d
	Very good

Age 11	97.50 ^a
	.80** ^a
	Very good

Age 12	80.00 ^a
	-.09 ^d
	Very good

Age 13	90.00 ^a -.03 ^d Very good
Age 14	85.00 ^a -.06 ^d Very good
Age 15	85.67 ^a .24 ^d Very good
Age 16	90.74 ^a .02 ^d Very good
Age 17	91.18 ^a .78** ^b Very good
Age 18	83.82 ^a -.04 ^d Very good
Age 19	78.21 ^b .14 ^d Good
Age 20	76.39 ^b .13 ^d Good
Age 21	77.78 ^b -.12 ^d Good
Age 22	93.33 ^a .69** ^b Very good
Age 23	92.50 ^a .69* ^b Very good

Age 24	92.50 ^a .69* ^b Very good
Age 25	77.14 ^b .46 ^d Good
Age 26	66.67 ^b -.21 ^d Good
Age 27	83.33 ^a .00 ^d Very good
Total cumulative hours	52.25 ^c .21 ^d Poor
Completed one-on-one with a coach/specialised instructor	
Age at first participation	88.71 ^a .66** ^b Very good
Hours per year	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	100.00 ^a 1.00** ^a Very good
Age 9	100.00 ^a 1.00** ^a Very good

Age 10	100.00 ^a 1.00** ^a Very good
Age 11	95.00 ^a .00 ^d Very good
Age 12	100.00 ^a 1.00** ^a Very good
Age 13	100.00 ^a 1.00** ^a Very good
Age 14	95.28 ^a .11 ^d Very good
Age 15	90.06 ^a .21 ^d Very good
Age 16	96.30 ^a .60** ^c Very good
Age 17	96.08 ^a .60** ^c Very good
Age 18	86.27 ^a -.02 ^d Very good
Age 19	86.15 ^a .36 ^d Very good
Age 20	85.00 ^a .36 ^d Very good

Age 21	90.28 ^a .25 ^d Very good
Age 22	100.00 ^a 1.00** ^a Very good
Age 23	100.00 ^a 1.00** ^a Very good
Age 24	100.00 ^a 1.00** ^a Very good
Age 25	100.00 ^a 1.00** ^a Very good
Age 26	100.00 ^a 1.00** ^a Very good
Age 27	83.33 ^a .00 ^d Very good
Total cumulative hours	74.02 ^b .21 ^d Good
Completed with others but without a coach/specialised instructor	
Age at first participation	84.33 ^a .72** ^b Very good
Hours per year	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good

Age 7	100.00 ^a 1.00** ^a Very good
Age 8	100.00 ^a 1.00** ^a Very good
Age 9	100.00 ^a 1.00** ^a Very good
Age 10	95.00 ^a .00 ^d Very good
Age 11	95.00 ^a .00 ^d Very good
Age 12	95.00 ^a .00 ^d Very good
Age 13	90.00 ^a .00 ^d Very good
Age 14	90.00 ^a .00 ^d Very good
Age 15	91.89 ^a .75** ^b Very good
Age 16	91.44 ^a .75** ^b Very good
Age 17	88.97 ^a .29 ^d Very good

Age 18	85.05 ^a .23 ^d Very good
Age 19	84.62 ^a .00 ^d Very good
Age 20	83.33 ^a .00 ^d Very good
Age 21	77.78 ^b .00 ^d Good
Age 22	88.89 ^a .00 ^d Very good
Age 23	75.00 ^b .00 ^d Good
Age 24	75.00 ^b .00 ^d Good
Age 25	85.71 ^a .00 ^d Very good
Age 26	83.33 ^a .00 ^d Very good
Age 27	100.00 ^a 1.00** ^a Very good
Total cumulative hours	75.42 ^b .03 ^d Good

Individual

Age at first participation	43.05 ^d
	.04 ^d
	Poor
Hours per year	
Age 5	100.00 ^a
	1.00** ^a
	Very good
Age 6	100.00 ^a
	1.00** ^a
	Very good
Age 7	100.00 ^a
	1.00** ^a
	Very good
Age 8	100.00 ^a
	1.00** ^a
	Very good
Age 9	100.00 ^a
	1.00** ^a
	Very good
Age 10	95.00 ^a
	.00 ^d
	Very good
Age 11	95.00 ^a
	.00 ^d
	Very good
Age 12	85.00 ^a
	-.02 ^d
	Very good
Age 13	88.33 ^a
	.90** ^a
	Very good
Age 14	87.72 ^a
	.90** ^a
	Very good

Age 15	70.99 ^b .84** ^a Good
Age 16	87.65 ^a .52** ^c Very good
Age 17	82.35 ^a .06 ^d Very good
Age 18	76.47 ^b .10 ^d Good
Age 19	73.08 ^b .02 ^d Good
Age 20	70.83 ^b .02 ^d Good
Age 21	61.11 ^c -.05 ^d Poor
Age 22	61.11 ^c -.07 ^d Poor
Age 23	43.75 ^d -.16 ^d Poor
Age 24	56.25 ^c -.10 ^d Poor
Age 25	64.29 ^c -.03 ^d Poor

Age 26	58.33 ^c
	-.07 ^d
	Poor
Age 27	75.00 ^b
	.05 ^d
	Good
Total cumulative hours	36.81 ^d
	.28 ^d
	Poor
Overall	
Age at first participation	69.32 ^b
	.28 ^d
	Good
Hours per year	
Age 5	100.00 ^a
	1.00** ^a
	Very good
Age 6	100.00 ^a
	1.00** ^a
	Very good
Age 7	100.00 ^a
	1.00** ^a
	Very good
Age 8	100.00 ^a
	1.00** ^a
	Very good
Age 9	100.00 ^a
	1.00** ^a
	Very good
Age 10	90.00 ^a
	.00 ^d
	Very good
Age 11	93.75 ^a
	.37 ^{†d}
	Very good

Age 12	72.50 ^b
	-.05 ^d
	Good
Age 13	73.33 ^b
	.75** ^b
	Good
Age 14	71.93 ^b
	.63** ^c
	Good
Age 15	76.26 ^b
	.79** ^b
	Good
Age 16	82.63 ^a
	.57** ^c
	Very good
Age 17	82.79 ^a
	.29 ^d
	Very good
Age 18	73.53 ^b
	-.01 ^d
	Good
Age 19	67.48 ^b
	.17 ^d
	Good
Age 20	64.77 ^c
	.15 ^d
	Poor
Age 21	50.23 ^c
	-.21 ^d
	Poor
Age 22	54.44 ^c
	.02 ^d
	Poor

Age 23	66.25 ^b .17 ^d Good
Age 24	61.25 ^c -.02 ^d Poor
Age 25	55.71 ^c -.09 ^d Poor
Age 26	41.67 ^d -.23 ^d Poor
Age 27	75.00 ^b -.04 ^d Good
Total cumulative hours	39.78 ^d -.01 ^d Poor

Sport specific play

Completed with others

Age at first participation	65.39 ^b .49** ^d Good
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Hours per year

Age 5	80.00 ^a .00 ^d Very good
Age 6	86.94 ^a .05 ^d Very good
Age 7	76.94 ^b -.09 ^d Good

Age 8	78.94 ^b .22 ^d Good
Age 9	83.74 ^a .54** ^c Very good
Age 10	83.44 ^a .61** ^c Very good
Age 11	87.08 ^a .76** ^b Very good
Age 12	82.38 ^a .88** ^a Very good
Age 13	75.05 ^b .69** ^b Good
Age 14	70.75 ^b .63** ^c Good
Age 15	79.73 ^b .65** ^b Good
Age 16	78.27 ^b .65** ^b Good
Age 17	76.80 ^b .76** ^b Good
Age 18	75.00 ^b .01 ^d Good

Age 19	78.85 ^b .29 ^d Good
Age 20	75.00 ^b -.06 ^d Good
Age 21	77.78 ^b -.09 ^d Good
Age 22	88.89 ^a .00 ^d Very good
Age 23	87.50 ^a .00 ^d Very good
Age 24	62.50 ^c -.08 ^d Poor
Age 25	71.43 ^b -.09 ^d Good
Age 26	66.67 ^b -.19 ^d Good
Age 27	75.00 ^b .39 ^d Good
Total cumulative hours	54.59 ^c .61** ^c Poor
Individual	
Age at first participation	88.06 ^a .13 ^d Very good

Hours per year	
Age 5	95.00 ^a .00 ^d Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	95.00 ^a .09 ^d Very good
Age 8	95.00 ^a .09 ^d Very good
Age 9	100.00 ^a 1.00** ^a Very good
Age 10	100.00 ^a 1.00** ^a Very good
Age 11	100.00 ^a 1.00** ^a Very good
Age 12	100.00 ^a 1.00** ^a Very good
Age 13	100.00 ^a 1.00** ^a Very good
Age 14	90.00 ^a .08 ^d Very good
Age 15	89.47 ^a .08 ^d Very good

Age 16	94.44 ^a .09 ^d Very good
Age 17	94.12 ^a .09 ^d Very good
Age 18	94.12 ^a .00 ^d Very good
Age 19	92.31 ^a .00 ^d Very good
Age 20	100.00 ^a 1.00** ^a Very good
Age 21	100.00 ^a 1.00** ^a Very good
Age 22	100.00 ^a 1.00** ^a Very good
Age 23	100.00 ^a 1.00** ^a Very good
Age 24	87.50 ^a .00 ^d Very good
Age 25	85.71 ^a .00 ^d Very good
Age 26	83.33 ^a .00 ^d Very good

Age 27	83.33 ^a .00 ^d Very good
Total cumulative hours	86.27 ^a .75** ^b Very good
Overall	
Age at first participation	65.39 ^b .49** ^d Good
Hours per year	
Age 5	80.00 ^a .00 ^d Very good
Age 6	87.17 ^a .14 ^d Very good
Age 7	77.17 ^b -.06 ^d Good
Age 8	79.17 ^b .16 ^d Good
Age 9	83.97 ^a .72** ^b Very good
Age 10	83.67 ^a .75** ^b Very good
Age 11	87.49 ^a .84** ^a Very good
Age 12	82.79 ^a .94** ^a Very good

Age 13	75.47 ^b .86** ^a Good
Age 14	68.97 ^b .65** ^b Good
Age 15	77.86 ^b .67** ^b Good
Age 16	76.30 ^b .69** ^b Good
Age 17	74.71 ^b .76** ^b Good
Age 18	73.11 ^b .06 ^d Good
Age 19	78.46 ^b .26 ^d Good
Age 20	75.00 ^b -.06 ^d Good
Age 21	77.78 ^b -.09 ^d Good
Age 22	88.89 ^a .00 ^d Very good
Age 23	87.50 ^a .00 ^d Very good

Age 24	62.50 ^c
	-.04 ^d
	Poor
Age 25	71.43 ^b
	-.06 ^d
	Good
Age 26	66.67 ^b
	-.10 ^d
	Good
Age 27	75.00 ^b
	.12 ^d
	Good
Total cumulative hours	53.84 ^c
	.72** ^b
	Moderate
<hr/>	
<i>All practice types combined</i>	
Age at first participation	85.01 ^a
	.94** ^a
	Very good
Hours per year	
Age 5	75.00 ^b
	-.05 ^d
	Good
Age 6	84.41 ^a
	.32 ^{†d}
	Very good
Age 7	69.41 ^b
	-.07 ^d
	Good
Age 8	76.63 ^b
	-.03 ^d
	Good

Age 9	82.43 ^a .73** ^b Very good
Age 10	72.07 ^b .41* ^d Good
Age 11	79.83 ^b .90** ^a Good
Age 12	62.79 ^c .84** ^a Moderate
Age 13	74.53 ^b .87** ^a Good
Age 14	77.24 ^b .92** ^a Good
Age 15	78.44 ^b .96** ^a Good
Age 16	75.09 ^b .94** ^a Good
Age 17	72.58 ^b .93** ^a Good
Age 18	80.08 ^a .82** ^a Very good
Age 19	79.27 ^b .90** ^a Good

Age 20	88.09 ^a .94** ^a Very good
Age 21	81.18 ^a .91** ^a Very good
Age 22	66.25 ^b .91** ^a Good
Age 23	71.03 ^b .86** ^a Good
Age 24	82.19 ^a .90** ^a Very good
Age 25	74.45 ^b .91** ^a Good
Age 26	65.54 ^b .40 ^d Good
Age 27	74.79 ^b .96** ^a Good
Total cumulative hours	64.99 ^b .90** ^a Good
<hr/>	
<i>Training camps</i>	
Age at first participation	71.31 ^b .72** ^b Good

Number of training camps

Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	100.00 ^a 1.00** ^a Very good
Age 9	95.00 ^a .00 ^d Very good
Age 10	95.00 ^a .00 ^d Very good
Age 11	80.00 ^a -.08 ^d Very good
Age 12	90.00 ^a -.01 ^d Very good
Age 13	78.13 ^b .50** ^c Good
Age 14	75.24 ^b .60** ^c Good
Age 15	77.74 ^b .51** ^c Good

Age 16	81.28 ^a .61** ^c Very good
Age 17	83.02 ^a .74** ^b Very good
Age 18	80.72 ^a .04 ^d Very good
Age 19	88.46 ^a .89** ^a Very good
Age 20	87.50 ^a .85** ^a Very good
Age 21	88.89 ^a .88** ^a Very good
Age 22	88.89 ^a .88** ^a Very good
Age 23	87.50 ^a .88** ^a Very good
Age 24	100.00 ^a 1.00** ^a Very good
Age 25	92.86 ^a .91** ^a Very good
Age 26	77.78 ^b .66** ^b Good

Age 27	100.00 ^a 1.00** ^a Very good
Duration of training camps	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	100.00 ^a 1.00** ^a Very good
Age 9	95.00 ^a .00 ^d Very good
Age 10	95.00 ^a .00 ^d Very good
Age 11	80.00 ^a -.07 ^d Very good
Age 12	87.50 ^a .13 ^d Very good
Age 13	76.61 ^b -.03 ^d Good
Age 14	76.25 ^b -.02 ^d Good

Age 15	79.82 ^b	-.05 ^d	Good
Age 16	76.32 ^b	.17 ^d	Good
Age 17	80.81 ^a	.18 ^d	Very good
Age 18	85.29 ^a	.50* ^d	Very good
Age 19	92.31 ^a	.98** ^a	Very good
Age 20	86.11 ^a	.74 ^d	Very good
Age 21	88.89 ^a	.97** ^a	Very good
Age 22	88.89 ^a	.97** ^a	Very good
Age 23	87.50 ^a	.97** ^a	Very good
Age 24	100.00 ^a	1.00** ^a	Very good
Age 25	100.00 ^a	1.00** ^a	Very good

Age 26	83.33 ^a .18 ^d Very good
Age 27	100.00 ^a 1.00** ^a Very good
Total weeks of training camps	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	100.00 ^a 1.00** ^a Very good
Age 9	95.00 ^a .00 ^d Very good
Age 10	95.00 ^a .00 ^d Very good
Age 11	80.00 ^a -.03 ^d Very good
Age 12	87.50 ^a -.02 ^d Very good
Age 13	73.79 ^b .00 ^d Good

Age 14	71.28 ^b -.01 ^d Good
Age 15	73.65 ^b -.02 ^d Good
Age 16	71.07 ^b .04 ^d Good
Age 17	77.79 ^b .06 ^d Good
Age 18	77.78 ^b .02 ^d Good
Age 19	88.46 ^a .99** ^a Very good
Age 20	81.94 ^a .88** ^a Very good
Age 21	88.89 ^a .99** ^a Very good
Age 22	88.89 ^a .99** ^a Very good
Age 23	87.50 ^a .99** ^a Very good
Age 24	100.00 ^a 1.00** ^a Very good

Age 25	92.86 ^a .97** ^a Very good
Age 26	77.78 ^b .31 ^d Good
Age 27	100.00 ^a 1.00** ^a Very good
Total cumulative weeks of training camps	49.20 ^d .05 ^d Poor

Note. Superscript letters denote classification of percent agreement values and correlation statistics.

^aVery good agreement/correlation classification. ^bGood agreement/correlation classification.

^cModerate agreement/correlation classification. ^dPoor agreement/correlation classification.

** $p \leq .01$. * $p \leq .05$. † $p > .10$.

Table 20

Test-Retest Reliability of Recall for Competition History

Item	Percent agreement value	
	Intraclass correlation coefficient	
	Overall rating	
<i>Regular season competitions</i>		
Age at first participation	76.68 ^b	
	.87** ^a	
	Good	
Total number of events/matches		
Age 5	90.00 ^a	
	-.05 ^d	
	Very good	
Age 6	94.00 ^a	
	.75** ^b	
	Very good	
Age 7	94.00 ^a	
	.56** ^c	
	Very good	
Age 8	88.79 ^a	
	.58** ^c	
	Very good	
Age 9	83.79 ^a	
	.23 ^d	
	Very good	
Age 10	74.06 ^b	
	.41* ^d	
	Good	
Age 11	79.07 ^b	
	.40* ^d	
	Good	
Age 12	69.40 ^b	
	.35 ^{†d}	
	Good	

Age 13	63.58 ^c .37 ^{† d} Poor
Age 14	59.74 ^c .60** ^c Poor
Age 15	57.10 ^c .40* ^d Poor
Age 16	60.34 ^c .34 ^{† d} Poor
Age 17	60.66 ^c .39 ^{† d} Poor
Age 18	76.67 ^b .46* ^d Good
Age 19	79.01 ^b .47* ^d Good
Age 20	77.10 ^b .43 ^{† d} Good
Age 21	68.31 ^b .50* ^c Good
Age 22	72.08 ^b .58* ^c Good
Age 23	68.33 ^b .38 ^d Good

Age 24	68.33 ^b	
	.32 ^d	
	Good	
Age 25	67.78 ^b	
	.36 ^d	
	Good	
Age 26	57.66 ^c	
	.13 ^d	
	Poor	
Age 27	66.52 ^b	
	.07 ^d	
	Good	
Overall	52.55 ^c	
	.42* ^d	
	Poor	
Total time spent at the competition venue		
Age 5	90.00 ^a	
	-.03 ^d	
	Very good	
Age 6	94.00 ^a	
	.70** ^b	
	Very good	
Age 7	94.00 ^a	
	.18 ^d	
	Very good	
Age 8	88.79 ^a	
	.30 ^{†d}	
	Very good	
Age 9	83.79 ^a	
	.13 ^d	
	Very good	
Age 10	71.76 ^b	
	.59** ^c	
	Good	

Age 11	75.02 ^b .49** ^d Good
Age 12	64.62 ^c .73** ^b Moderate
Age 13	57.55 ^c .70** ^b Moderate
Age 14	54.17 ^c .81** ^a Moderate
Age 15	51.28 ^c .63** ^c Poor
Age 16	54.06 ^c .54** ^c Poor
Age 17	55.36 ^c .64** ^c Poor
Age 18	66.38 ^b .29 ^d Good
Age 19	30.26 ^d .77** ^b Poor
Age 20	72.04 ^b .41 ^d Good
Age 21	69.03 ^b .47 ^{†d} Good

Age 22	71.19 ^b	
	.41 ^d	
	Good	
Age 23	69.94 ^b	
	.34 ^d	
	Good	
Age 24	69.32 ^b	
	.27 ^d	
	Good	
Age 25	68.35 ^b	
	.26 ^d	
	Good	
Age 26	55.93 ^c	
	.08 ^d	
	Poor	
Age 27	65.52 ^b	
	.01 ^d	
	Good	
Overall	49.68 ^d	
	.40* ^d	
	Poor	
Total time spent actively engaged in competition		
Age 5	90.00 ^a	
	-.05 ^d	
	Very good	
Age 6	91.67 ^a	
	.96** ^a	
	Very good	
Age 7	91.67 ^a	
	.94** ^a	
	Very good	
Age 8	85.63 ^a	
	.43* ^d	
	Very good	

Age 9	80.63 ^a .29 ^d Very good
Age 10	72.25 ^b .34 ^{† d} Good
Age 11	68.23 ^b .34 ^{† d} Good
Age 12	57.94 ^c .28 ^d Poor
Age 13	58.65 ^c .25 ^d Poor
Age 14	53.78 ^c .33 ^{† d} Poor
Age 15	49.54 ^d .09 ^d Poor
Age 16	51.45 ^c .05 ^d Poor
Age 17	51.31 ^c .22 ^d Poor
Age 18	65.30 ^b .37 ^{† d} Good
Age 19	67.80 ^b .52* ^c Good

Age 20	67.90 ^b .45 ^{† d} Good
Age 21	63.54 ^c .49 ^{† d} Poor
Age 22	65.83 ^b .53* ^c Good
Age 23	64.58 ^c .45 ^d Poor
Age 24	58.13 ^c .10 ^d Poor
Age 25	66.94 ^b .30 ^d Good
Age 26	53.70 ^c .04 ^d Poor
Age 27	66.52 ^b .08 ^d Good
Overall	42.38 ^d .35 ^{† d} Poor
<hr/>	
<i>Occasional competitions</i>	
Age at first participation	49.85 ^d .92** ^a Poor
Total number of events/matches	
Age 5	100.00 ^a 1.00** ^a Very good

Age 6	95.00 ^a .00 ^d Very good
Age 7	90.00 ^a .00 ^d Very good
Age 8	90.00 ^a .00 ^d Very good
Age 9	94.17 ^a .92** ^a Very good
Age 10	85.00 ^a .62** ^c Very good
Age 11	73.75 ^b .29 ^{† d} Good
Age 12	77.75 ^b .54** ^c Good
Age 13	78.13 ^b .76** ^b Good
Age 14	81.35 ^a .75** ^b Very good
Age 15	69.72 ^b .57** ^c Good
Age 16	81.84 ^a .70** ^b Very good

Age 17	79.60 ^b .51* ^c Good
Age 18	85.74 ^a .75** ^b Very good
Age 19	81.25 ^a .78** ^b Very good
Age 20	90.91 ^a .97** ^a Very good
Age 21	100.00 ^a 1.00** ^a Very good
Age 22	100.00 ^a 1.00** ^a Very good
Age 23	100.00 ^a 1.00** ^a Very good
Age 24	87.50 ^a .97** ^a Very good
Age 25	66.67 ^b .00 ^d Good
Age 26	66.67 ^b .00 ^d Good
Age 27	80.00 ^a .00 ^d Very good

Overall	40.55 ^d
	.65** ^c
	Poor
Total time spent at the competition venue	
Age 5	100.00 ^a
	1.00** ^a
	Very good
Age 6	95.00 ^a
	.00 ^d
	Very good
Age 7	90.00 ^a
	.00 ^d
	Very good
Age 8	90.00 ^a
	.00 ^d
	Very good
Age 9	93.33 ^a
	.81** ^a
	Very good
Age 10	83.75 ^a
	.54** ^c
	Very good
Age 11	73.75 ^b
	.10 ^d
	Good
Age 12	75.81 ^b
	.45* ^d
	Good
Age 13	76.00 ^b
	.50** ^c
	Good
Age 14	82.00 ^a
	.53** ^c
	Very good

Age 15	70.35 ^b .31 ^{† d} Good
Age 16	83.92 ^a .67** ^b Very good
Age 17	85.88 ^a .89** ^a Very good
Age 18	93.75 ^a .99** ^a Very good
Age 19	83.33 ^a .92** ^a Very good
Age 20	90.91 ^a .96** ^a Very good
Age 21	100.00 ^a 1.00** ^a Very good
Age 22	100.00 ^a 1.00** ^a Very good
Age 23	100.00 ^a 1.00** ^a Very good
Age 24	87.50 ^a .97** ^a Very good
Age 25	66.67 ^b .00 ^d Good

Age 26	66.67 ^b	
	.00 ^d	
	Good	
Age 27	80.00 ^a	
	.00 ^d	
	Very good	
Overall	37.10 ^d	
	.63** ^c	
	Poor	
Total time spent actively engaged in competition		
Age 5	100.00 ^a	
	1.00** ^a	
	Very good	
Age 6	95.00 ^a	
	.00 ^d	
	Very good	
Age 7	90.00 ^a	
	.00 ^d	
	Very good	
Age 8	90.00 ^a	
	.00 ^d	
	Very good	
Age 9	90.83 ^a	
	.00 ^d	
	Very good	
Age 10	80.63 ^a	
	.11 ^d	
	Very good	
Age 11	70.63 ^b	
	-.04 ^d	
	Good	
Age 12	72.21 ^b	
	.15 ^d	
	Good	

Age 13	74.24 ^b .17 ^d Good
Age 14	80.90 ^a .37* ^d Very good
Age 15	71.93 ^b .10 ^d Good
Age 16	84.80 ^a .24 ^d Very good
Age 17	86.76 ^a .95** ^a Very good
Age 18	90.00 ^a .67** ^b Very good
Age 19	80.56 ^a .54* ^c Very good
Age 20	86.36 ^a .66** ^b Very good
Age 21	94.44 ^a .80** ^a Very good
Age 22	93.75 ^a .80** ^a Very good
Age 23	93.75 ^a .80** ^a Very good

Age 24	81.25 ^a .75** ^b Very good
Age 25	66.67 ^b .00 ^d Good
Age 26	66.67 ^b .00 ^d Good
Age 27	80.00 ^a .00 ^d Very good
Overall	37.79 ^d .26 ^d Poor
<hr/> <i>Tournament format competitions</i>	
Age at first participation	79.60 ^b .93** ^a Good
Total number of events/matches	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	95.00 ^a .00 ^d Very good
Age 9	95.00 ^a .00 ^d Very good

Age 10	83.20 ^a .79** ^b Very good
Age 11	78.20 ^b .55** ^c Good
Age 12	67.50 ^b .44* ^d Good
Age 13	78.02 ^b .51** ^c Good
Age 14	82.90 ^a .90** ^a Very good
Age 15	78.66 ^b .93** ^a Good
Age 16	76.28 ^b .93** ^a Good
Age 17	72.80 ^b .93** ^a Good
Age 18	87.61 ^a .75** ^b Very good
Age 19	83.48 ^a .59* ^c Very good
Age 20	79.34 ^b .50 [†] ^d Good

Age 21	89.09 ^a .64* ^c Very good
Age 22	98.21 ^a .99** ^a Very good
Age 23	96.43 ^a .99** ^a Very good
Age 24	98.21 ^a .99** ^a Very good
Age 25	97.92 ^a .99** ^a Very good
Age 26	83.33 ^a .00 ^d Very good
Age 27	100.00 ^a 1.00** ^a Very good
Overall	71.70 ^b .88** ^a Good
Total time spent at the competition venue	
Age 5	100.00 ^a 1.00** ^a Very good
Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good

Age 8	95.00 ^a	.00 ^d	Very good
Age 9	95.00 ^a	.00 ^d	Very good
Age 10	83.20 ^a	.42* ^d	Very good
Age 11	78.20 ^b	.12 ^d	Good
Age 12	66.63 ^b	-.03 ^d	Good
Age 13	71.65 ^b	.13 ^d	Good
Age 14	72.72 ^b	.44* ^d	Good
Age 15	69.72 ^b	.52* ^c	Good
Age 16	65.39 ^b	.49* ^d	Good
Age 17	69.33 ^b	.67** ^b	Good
Age 18	81.08 ^a	.39 ^{†d}	Very good

Age 19	78.94 ^b .37 ^d Good
Age 20	74.39 ^b .34 ^d Good
Age 21	82.44 ^a .33 ^d Very good
Age 22	90.87 ^a .50 ^{†d} Very good
Age 23	88.09 ^a .49 ^{†d} Very good
Age 24	90.87 ^a .50 ^{†d} Very good
Age 25	86.70 ^a .39 ^d Very good
Age 26	83.33 ^a .00 ^d Very good
Age 27	100.00 ^a 1.00** ^a Very good
Overall	59.74 ^c .32 ^{†d} Poor
Total time spent actively engaged in competition	
Age 5	100.00 ^a 1.00** ^a Very good

Age 6	100.00 ^a 1.00** ^a Very good
Age 7	100.00 ^a 1.00** ^a Very good
Age 8	95.00 ^a .00 ^d Very good
Age 9	95.00 ^a .00 ^d Very good
Age 10	83.20 ^a .89** ^a Very good
Age 11	78.20 ^b .85** ^a Good
Age 12	65.94 ^b .00 ^d Good
Age 13	70.64 ^b .05 ^d Good
Age 14	70.56 ^b .40* ^d Good
Age 15	67.75 ^b .51** ^c Good
Age 16	64.16 ^c .66** ^b Moderate

Age 17	67.88 ^b .74** ^b Good
Age 18	79.36 ^b .34 ^d Good
Age 19	79.43 ^b .44 ^{† d} Good
Age 20	74.92 ^b .41 ^{† d} Good
Age 21	82.44 ^a .33 ^d Very good
Age 22	90.87 ^a .50 ^{† d} Very good
Age 23	89.08 ^a .49 ^{† d} Very good
Age 24	90.87 ^a .50 ^{† d} Very good
Age 25	86.70 ^a .39 ^d Very good
Age 26	83.33 ^a .00 ^d Very good
Age 27	100.00 ^a 1.00** ^a Very good

Overall	57.26 ^c .38** ^d Poor
<hr/>	
<i>All competition formats combined</i>	
Age at first participation	89.64 ^a .95** ^a Very good
Total number of events/matches	
Age 5	90.00 ^a -.05 ^d Very good
Age 6	89.00 ^a .74** ^b Very good
Age 7	89.00 ^a .48** ^d Very good
Age 8	84.00 ^a .56** ^c Very good
Age 9	80.00 ^a .25 ^d Very good
Age 10	70.30 ^b .68** ^b Good
Age 11	77.84 ^b .68** ^b Good
Age 12	66.38 ^b .53** ^c Good
Age 13	73.12 ^b .66** ^b Good

Age 14	68.08 ^b .84** ^a Good
Age 15	70.20 ^b .70** ^b Good
Age 16	71.67 ^b .69** ^b Good
Age 17	64.06 ^c .67** ^b Moderate
Age 18	73.57 ^b .73** ^b Good
Age 19	76.05 ^b .51* ^c Good
Age 20	74.96 ^b .42 ^{†d} Good
Age 21	66.66 ^b .51* ^c Good
Age 22	74.36 ^b .64* ^c Good
Age 23	71.31 ^b .42 ^d Good
Age 24	70.57 ^b .31 ^d Good

Age 25	74.26 ^b .57 ^{† c} Good
Age 26	67.63 ^b .25 ^d Good
Age 27	76.54 ^b .46 ^d Good
Overall	63.02 ^c .54** ^c Poor
Total time spent at the competition venue	
Age 5	90.00 ^a -.03 ^d Very good
Age 6	89.00 ^a .69** ^b Very good
Age 7	89.00 ^a .17 ^d Very good
Age 8	84.83 ^a .29 ^{† d} Very good
Age 9	80.12 ^a .16 ^d Very good
Age 10	67.13 ^b .62** ^c Good
Age 11	74.46 ^b .52** ^c Good

Age 12	58.47 ^c .51** ^c Poor
Age 13	62.69 ^c .54** ^c Poor
Age 14	59.80 ^c .59** ^c Poor
Age 15	63.60 ^c .58** ^c Poor
Age 16	61.62 ^c .51* ^c Poor
Age 17	58.97 ^c .66** ^b Moderate
Age 18	62.87 ^c .35 ^{†d} Poor
Age 19	69.84 ^b .49* ^d Good
Age 20	68.05 ^b .38 ^d Good
Age 21	65.06 ^b .46 ^{†d} Good
Age 22	69.81 ^b .48 ^{†d} Good

Age 23	69.08 ^b	
	.42 ^d	
	Good	
Age 24	67.90 ^b	
	.30 ^d	
	Good	
Age 25	64.78 ^c	
	.32 ^d	
	Poor	
Age 26	57.02 ^c	
	-.05 ^d	
	Poor	
Age 27	71.82 ^b	
	.12 ^d	
	Good	
Overall	55.87 ^c	
	.36 ^{† d}	
	Poor	
Total time spent actively engaged in competition		
Age 5	90.00 ^a	
	-.05 ^d	
	Very good	
Age 6	86.67 ^a	
	.96** ^a	
	Very good	
Age 7	86.67 ^a	
	.93** ^a	
	Very good	
Age 8	80.83 ^a	
	.43* ^d	
	Very good	
Age 9	76.99 ^b	
	.29 ^d	
	Good	

Age 10	68.61 ^b .54** ^c Good
Age 11	76.67 ^b .54** ^c Good
Age 12	57.69 ^c .13 ^d Poor
Age 13	62.65 ^c .27 ^d Poor
Age 14	56.60 ^c .43* ^d Poor
Age 15	62.04 ^c .33 ^{†d} Poor
Age 16	56.78 ^c .33 ^d Poor
Age 17	52.44 ^c .43* ^d Poor
Age 18	61.82 ^c .37 ^{†d} Poor
Age 19	65.56 ^b .52* ^c Good
Age 20	64.12 ^c .45 ^{†d} Poor

Age 21	59.24 ^c .46 ^{†d} Poor
Age 22	65.81 ^b .55* ^c Good
Age 23	65.04 ^b .49 ^{†d} Good
Age 24	58.07 ^c .15 ^d Poor
Age 25	64.38 ^c .35 ^d Poor
Age 26	54.78 ^c -.16 ^d Poor
Age 27	72.72 ^b .18 ^d Good
Overall	53.74 ^c .38* ^d Poor

Note. Superscript letters denote classification of percent agreement values and correlation statistics.

^aVery good agreement/correlation classification. ^bGood agreement/correlation classification.

^cModerate agreement/correlation classification. ^dPoor agreement/correlation classification.

** $p \leq .01$. * $p \leq .05$. [†] $p > .10$.

Table 21

Test-Retest Reliability of Recall for Participation in Other Organised Sports

Item	Percent agreement value	
	Intraclass correlation coefficient	
	Overall rating	
<i>All other organised sports combined</i>		
Total number of sports reported	66.57 ^b	
	.35 ^{† d}	
	Good	
Age at first participation	70.71 ^b	
	.32 ^{† d}	
	Good	
Age at specialisation in main sport	77.88 ^b	
	.65** ^b	
	Good	
Highest level of competition reached	58.82 ^c	
	N/A	
	Moderate	
Total hours of involvement		
Age 5	55.00 ^c	
	-.06 ^d	
	Poor	
Age 6	66.71 ^b	
	.19 ^d	
	Good	
Age 7	60.04 ^c	
	.57** ^c	
	Poor	
Age 8	64.12 ^c	
	.46* ^d	
	Poor	
Age 9	55.83 ^c	
	.18 ^d	
	Poor	

Age 10	47.71 ^d .73** ^b Poor
Age 11	56.63 ^c .72** ^b Moderate
Age 12	56.44 ^c .85** ^a Moderate
Age 13	62.82 ^c .87** ^a Moderate
Age 14	64.15 ^c -.02 ^d Poor
Age 15	67.74 ^b .60** ^c Good
Age 16	60.28 ^c .46* ^d Poor
Age 17	59.13 ^c .59** ^c Moderate
Age 18	61.46 ^c -.05 ^d Poor
Age 19	66.67 ^b -.02 ^d Good
Age 20	81.82 ^a .00 ^d Very good

Age 21	86.24 ^a .91** ^a Very good
Age 22	87.50 ^a .00 ^d Very good
Age 23	81.25 ^a .76** ^b Very good
Age 24	81.25 ^a .76** ^b Very good
Age 25	83.33 ^a .00 ^d Very good
Age 26	100.00 ^a 1.00** ^a Very good
Age 27	80.00 ^a .00 ^d Very good
Overall	59.44 ^c .73** ^b Moderate
<hr/>	
<i>Other organised sport one</i>	
Age at first participation	64.02 ^c .64** ^c Poor
Age at cessation of participation	71.74 ^b .60** ^c Good
Total hours of involvement	
Age 5	72.22 ^b -.08 ^d Good

Age 6	75.93 ^b .21 ^d Good
Age 7	67.59 ^b .56** ^c Good
Age 8	64.26 ^c .33 ^{† d} Poor
Age 9	58.70 ^c .10 ^d Poor
Age 10	56.17 ^c .75** ^b Moderate
Age 11	63.07 ^c .73** ^b Moderate
Age 12	61.63 ^c .89** ^a Moderate
Age 13	71.41 ^b .90** ^a Good
Age 14	73.28 ^b -.03 ^d Good
Age 15	71.38 ^b .44* ^d Good
Age 16	55.67 ^c .28 ^d Poor

Age 17	59.56 ^c .60** ^c Poor
Age 18	80.00 ^a -.07 ^d Very good
Age 19	90.91 ^a .00 ^d Very good
Age 20	90.91 ^a .00 ^d Very good
Age 21	87.50 ^a .00 ^d Very good
Age 22	87.51 ^a .00 ^d Very good
Age 23	92.86 ^a .81** ^a Very good
Age 24	87.50 ^a .00 ^d Very good
Age 25	80.00 ^a .00 ^d Very good
Age 26	100.00 ^a 1.00** ^a Very good
Age 27	100.00 ^a 1.00** ^a Very good

Overall	51.20 ^b .77** ^b Moderate
Highest level of competition	
Age 5	72.22 ^b N/A Good
Age 6	77.78 ^b N/A Good
Age 7	72.22 ^b N/A Good
Age 8	72.22 ^b N/A Good
Age 9	50.00 ^c N/A Moderate
Age 10	55.56 ^c N/A Moderate
Age 11	61.11 ^c N/A Moderate
Age 12	61.11 ^c N/A Moderate
Age 13	66.67 ^b N/A Good
Age 14	66.67 ^b N/A Good

Age 15	70.59 ^b N/A Good
Age 16	53.33 ^c N/A Moderate
Age 17	66.67 ^b N/A Good
Age 18	80.00 ^a N/A Very good
Age 19	90.91 ^a N/A Very good
Age 20	90.00 ^a N/A Very good
Age 21	87.50 ^a N/A Very good
Age 22	85.71 ^a N/A Very good
Age 23	100.00 ^a N/A Very good
Age 24	100.00 ^a N/A Very good
Age 25	80.00 ^a N/A Very good

Age 26	100.00 ^a N/A Very good
Age 27	100.00 ^a N/A Very good
Overall	61.11 ^c N/A Moderate
<hr/>	
<i>Other organised sport two</i>	
Age at first participation	60.23 ^c -.49 ^d Poor
Age at cessation of participation	63.88 ^c .15 ^d Poor
Total hours of involvement	
Age 5	86.67 ^a .01 ^d Very good
Age 6	99.26 ^a .99** ^a Very good
Age 7	92.59 ^a .48* ^d Very good
Age 8	98.84 ^a 1.00** ^a Very good
Age 9	98.84 ^a 1.00** ^a Very good
Age 10	82.50 ^a .26 ^d Very good

Age 11	73.27 ^b .64* ^c Good
Age 12	58.84 ^c .19 ^d Poor
Age 13	79.54 ^b .69** ^b Good
Age 14	92.50 ^a .89** ^a Very good
Age 15	80.06 ^a .54** ^c Very good
Age 16	81.46 ^a .51* ^c Very good
Age 17	93.48 ^a .87** ^a Very good
Age 18	76.92 ^b .00 ^d Good
Age 19	88.89 ^a .00 ^d Very good
Age 20	100.00 ^a 1.00** ^a Very good
Age 21	95.83 ^a .96** ^a Very good

Age 22	100.00 ^a
	1.00** ^a
	Very good
Age 23	100.00 ^a
	1.00** ^a
	Very good
Age 24	100.00 ^a
	1.00** ^a
	Very good
Age 25	100.00 ^a
	1.00** ^a
	Very good
Age 26	100.00 ^a
	1.00** ^a
	Very good
Age 27	100.00 ^a
	1.00** ^a
	Very good
Overall	36.05 ^d
	.24 ^d
	Poor
Highest level of competition	
Age 5	86.67 ^a
	N/A
	Very good
Age 6	100.00 ^a
	N/A
	Very good
Age 7	93.33 ^a
	N/A
	Very good
Age 8	100.00 ^a
	N/A
	Very good

Age 9	93.33 ^a
	N/A
	Very good
Age 10	80.00 ^a
	N/A
	Very good
Age 11	80.00 ^a
	N/A
	Very good
Age 12	73.33 ^b
	N/A
	Good
Age 13	86.67 ^a
	N/A
	Very good
Age 14	93.33 ^a
	N/A
	Very good
Age 15	76.92 ^b
	N/A
	Good
Age 16	84.62 ^a
	N/A
	Very good
Age 17	100.00 ^a
	N/A
	Very good
Age 18	76.92 ^b
	N/A
	Good
Age 19	88.89 ^a
	N/A
	Very good

Age 20	100.00 ^a
	N/A
	Very good
Age 21	100.00 ^a
	N/A
	Very good
Age 22	100.00 ^a
	N/A
	Very good
Age 23	100.00 ^a
	N/A
	Very good
Age 24	100.00 ^a
	N/A
	Very good
Age 25	100.00 ^a
	N/A
	Very good
Age 26	100.00 ^a
	N/A
	Very good
Age 27	100.00 ^a
	N/A
	Very good
Overall	60.00 ^c
	N/A
	Moderate

Note. Superscript letters denote classification of percent agreement values and correlation statistics.

^aVery good agreement/correlation classification. ^bGood agreement/correlation classification.

^cModerate agreement/correlation classification. ^dPoor agreement/correlation classification.

** $p \leq .01$. * $p \leq .05$. † $p > .10$.

Table 22

Test-Retest Reliability of Recall for Participation in Informal Playful Sporting Games

Item	Percent agreement value	
	Intraclass correlation coefficient	
	Overall rating	
Total number of playful games reported	50.77 ^c	
	.46* ^d	
	Poor	
Age at first participation	51.79 ^c	
	.24 ^d	
	Poor	
Age at cessation of participation	61.03 ^c	
	.09 ^d	
	Poor	
Total hours of involvement		
Age 5	58.42 ^c	
	.02 ^d	
	Poor	
Age 6	43.98 ^d	
	-.07 ^d	
	Poor	
Age 7	48.64 ^d	
	-.04 ^d	
	Poor	
Age 8	43.09 ^d	
	-.05 ^d	
	Poor	
Age 9	44.74 ^d	
	-.01 ^d	
	Poor	
Age 10	43.09 ^d	
	.03 ^d	
	Poor	

Age 11	40.16 ^d
	.00 ^d
	Poor
Age 12	41.59 ^d
	.03 ^d
	Poor
Age 13	45.91 ^d
	.16 ^d
	Poor
Age 14	48.07 ^d
	.22 ^d
	Poor
Age 15	50.90 ^c
	.12 ^d
	Poor
Age 16	44.40 ^d
	.03 ^d
	Poor
Age 17	33.56 ^d
	.03 ^d
	Poor
Age 18	20.54 ^d
	-.17 ^d
	Poor
Age 19	19.05 ^d
	-.19 ^d
	Poor
Age 20	22.73 ^d
	-.36 ^d
	Poor
Age 21	20.37 ^d
	-.46 ^d
	Poor

Age 22	26.19 ^d
	-.02 ^d
	Poor
Age 23	26.19 ^d
	-.11 ^d
	Poor
Age 24	26.19 ^d
	-.12 ^d
	Poor
Age 25	36.11 ^d
	-.42 ^d
	Poor
Age 26	36.11 ^d
	-.42 ^d
	Poor
Age 27	32.00 ^d
	-.19 ^d
	Poor
Overall	36.20 ^d
	-.10 ^d
	Poor
Most frequent sporting game	35.00 ^d
	N/A
	Poor
Percentage of play time devoted to most frequent sporting game	49.67 ^d
	.15 ^d
	Poor
Second most frequent sporting game	15.79 ^d
	N/A
	Poor
Percentage of play time devoted to second most frequent sporting game	38.57 ^d
	.20 ^d
	Poor

Note. Superscript letters denote classification of percent agreement values and correlation statistics.

^aVery good agreement/correlation classification. ^bGood agreement/correlation classification.

^cModerate agreement/correlation classification. ^dPoor agreement/correlation classification.

** $p \leq .01$. * $p \leq .05$. † $p > .10$.

Table 23

Test-Retest Reliability of Recall for Familial Demographics and Participation in Sport and Physical Activity

Item	Percent agreement value	
	Intraclass correlation coefficient	
	Overall rating	
<i>Biological mother</i>		
Demographics		
Date of birth	75.00 ^b	
	N/A	
	Good	
Main country of residence	85.00 ^a	
	N/A	
	Very good	
Highest level of education	85.00 ^a	
	N/A	
	Very good	
Athlete’s age when started living together	100.00 ^a	
	1.00** ^a	
	Very good	
Athlete’s age when stopped living together	98.30 ^a	
	.99** ^a	
	Very good	
Frequency of participation in sport and physical activity during the time living with athlete		
General fitness activities	40.00 ^d	
	N/A	
	Poor	
Recreational sport	60.00 ^c	
	N/A	
	Moderate	
Competitive sport	75.00 ^b	
	N/A	
	Good	

Participation in competitive sport during any time in their life

All other sports combined

Number of competitive sports	67.50 ^b
	.46* ^d
	Good
Highest level of competition	46.15 ^d
	N/A
	Poor

Athlete's main sport

Participation (yes/no)	75.00 ^b
	N/A
	Good
Highest level of competition	66.67 ^b
	N/A
	Good

Sport one

Sport type	53.85 ^c
	N/A
	Moderate
Highest level of competition	46.15 ^d
	N/A
	Poor

Sport two

Sport type	33.33 ^d
	N/A
	Poor
Highest level of competition	11.11 ^d
	N/A
	Poor

Sport three

Sport type	Insufficient Data
Highest level of competition	Insufficient Data

Biological father

Demographics

Date of birth	65.00 ^b
	N/A
	Good
Main country of residence	90.00 ^a
	N/A
	Very good
Highest level of education	75.00 ^b
	N/A
	Good
Athlete's age when started living together	100.00 ^a
	1.00** ^a
	Very good
Athlete's age when stopped living together	97.93 ^a
	1.00** ^a
	Very good
Frequency of participation in sport and physical activity during the time living with athlete	
General fitness activities	60.00 ^c
	N/A
	Moderate
Recreational sport	60.00 ^c
	N/A
	Moderate
Competitive sport	80.00 ^a
	N/A
	Very good
Participation in competitive sport during any time in their life	
All other sports combined	
Number of competitive sports	62.50 ^c
	.47* ^d
	Poor

Highest level of competition	60.00 ^c
	N/A
	Moderate
Athlete's main sport	
Participation (yes/no)	95.00 ^a
	N/A
	Very good
Highest level of competition	66.67 ^b
	N/A
	Good
Sport one	
Sport type	62.50 ^c
	N/A
	Moderate
Highest level of competition	42.86 ^d
	N/A
	Poor
Sport two	
Sport type	25.00 ^d
	N/A
	Poor
Highest level of competition	27.27 ^d
	N/A
	Poor
Sport three	
Sport type	42.86 ^d
	N/A
	Poor
Highest level of competition	16.67 ^d
	N/A
	Poor

Sibling one

Demographics

Sex	90.00 ^a
	N/A
	Very good
Relationship to athlete	95.00 ^a
	N/A
	Very good
Date of birth	80.00 ^a
	N/A
	Very good
Main country of residence	95.00 ^a
	N/A
	Very good
Highest level of education	70.00 ^b
	N/A
	Good
Athlete's age when started living together	81.50 ^a
	.38 ^{†d}
	Very good
Athlete's age when stopped living together	86.28 ^a
	.76** ^b
	Very good
Frequency of participation in sport and physical activity during the time living with athlete	
General fitness activities	60.00 ^c
	N/A
	Moderate
Recreational sport	45.00 ^d
	N/A
	Poor
Competitive sport	45.00 ^d
	N/A
	Poor

Participation in competitive sport during any time in their life

All other sports combined

Number of competitive sports 60.75^c
.51**^c

Poor

Highest level of competition 66.67^b

N/A

Good

Athlete's main sport

Participation (yes/no) 90.00^a
N/A

Very good

Highest level of competition 62.50^c

N/A

Moderate

Sport one

Sport type 81.25^a
N/A

Very good

Highest level of competition 75.00^b

N/A

Good

Sport two

Sport type 42.86^d
N/A

Poor

Highest level of competition 28.57^d

N/A

Poor

Sport three

Sport type 33.33^d
N/A

Poor

Highest level of competition	25.00 ^d
	N/A
	Poor
<hr/>	
<i>Sibling two</i>	
Demographics	
Sex	100.00 ^a
	N/A
	Very good
Relationship to athlete	100.00 ^a
	N/A
	Very good
Date of birth	100.00 ^a
	N/A
	Very good
Main country of residence	100.00 ^a
	N/A
	Very good
Highest level of education	93.33 ^a
	N/A
	Very good
Athlete's age when started living together	96.90 ^a
	.99** ^a
	Very good
Athlete's age when stopped living together	96.34 ^a
	.99** ^a
	Very good
Frequency of participation in sport and physical activity during the time living with athlete	
General fitness activities	53.33 ^c
	N/A
	Moderate
Recreational sport	53.33 ^c
	N/A
	Moderate

Competitive sport	66.67 ^b
	N/A
	Good
Participation in competitive sport during any time in their life	
All other sports combined	
Number of competitive sports	54.44 ^c
	.55* ^c
	Poor
Highest level of competition	30.00 ^d
	N/A
	Poor
Athlete's main sport	
Participation (yes/no)	86.67 ^a
	N/A
	Very good
Highest level of competition	28.57 ^d
	N/A
	Poor
Sport one	
Sport type	75.00 ^b
	N/A
	Good
Highest level of competition	30.00 ^d
	N/A
	Poor
Sport two	
Sport type	20.00 ^d
	N/A
	Poor
Highest level of competition	20.00 ^d
	N/A
	Poor

Sport three

Sport type

Insufficient
data

Highest level of competition

Insufficient
data

Note. Superscript letters denote classification of percent agreement values and correlation statistics.

^aVery good agreement/correlation classification. ^bGood agreement/correlation classification.

^cModerate agreement/correlation classification. ^dPoor agreement/correlation classification.

** $p \leq .01$. * $p \leq .05$. † $p > .10$.

Table 24

Test-Retest Reliability of Recall for Places of Residence

Item	Percent agreement value	
	Intraclass correlation coefficient	
	Overall rating	
Number of residences	89.25 ^a	
	.88** ^a	
	Very good	
Residence one		
Location	100.00 ^a	
	N/A	
	Very good	
Residence two		
Location	85.71 ^a	
	N/A	
	Very good	
Age at relocation to residence	86.58 ^a	
	.99** ^a	
	Very good	
Main reason for relocation to residence	78.57 ^b	
	N/A	
	Good	
Residence three		
Location	40.00 ^d	
	N/A	
	Poor	
Age at relocation to residence	87.21 ^a	
	.99** ^a	
	Very good	
Main reason for relocation to residence	80.00 ^a	
	N/A	
	Very good	

Residence four	
Location	44.44 ^d
	N/A
	Poor
Age at relocation to residence	50.57 ^c
	.01 ^d
	Poor
Main reason for relocation to residence	44.44 ^d
	N/A
	Poor
Relocations for reasons relating to sport	
Number of relocations	95.00 ^a
	.73** ^b
	Very good
Age at first relocation	75.00 ^b
	.84** ^a
	Good

Note. Superscript letters denote classification of percent agreement values and correlation statistics.

^aVery good agreement/correlation classification. ^bGood agreement/correlation classification.

^cModerate agreement/correlation classification. ^dPoor agreement/correlation classification.

** $p \leq .01$. * $p \leq .05$. † $p > .10$.

Appendix A.

The Developmental History of Athletes Questionnaire (Original Version)

The Developmental History of Athletes Questionnaire

Introduction

The purpose of this study is to develop a questionnaire that will help us to learn more about the developmental pathways of elite athletes. You have been invited to participate in this process because you are recognised as being an elite level performer within your sport. Our hope is to determine commonalties in the developmental histories and the practice conditions experienced by elite athletes, so that recommendations can be made relating to the optimal conditions conducive to the development of sport expertise. To do this we are conducting a series of questionnaires and interviews, some of which will be done in a chart format. Your assistance in completing this questionnaire and other parts of the study is greatly appreciated.

Please answer the questions to the best of your ability, providing as much detailed information as you can remember.

Feel free to refer back to previous sections of the questionnaire to assist you in your recall. When completing the charts you may find it helpful to begin with the current year of your involvement, and work backwards to your initial year of participation.

When answering the questions, please exclude any compulsory school physical activity / sport participation, however, include any school based sporting activities that you voluntarily participated in.

Please feel free to ask any questions you may have that may help you in your completion of this questionnaire.

ABOUT YOU

*The following questions relate to some general personal information.
Please tell me about you.*

Gender: ☐ Male ☐ Female

Date of Birth: _____
 Day *Month* *Year*

Nationality: _____

YOUR SPORTING CAREER

*The following questions relate to your achievements in your main sport.
Please tell me about your main sport.*

What is your main sport? _____

What is the highest level of representation you have reached in this sport?

What is your greatest achievement in this sport?

At what age did you get the idea to become an elite athlete? _____

At what age did you set yourself the goal of becoming an elite athlete? _____

Do you feel that you have reached the peak of your sporting career yet? ☐ Yes ☐ No

If yes, at what age did you reach the peak of your sporting career? _____

Identify any particular times at which you noticed a distinct **change in your participation or success** in your main sport (e.g. practice hours / type, level of representation, ranking), that marked a transition from one stage of your career to another? What exactly was it that **triggered that change** (e.g. new coach, retirement of a player, received a scholarship)?

For example:

Age	Transition from	To	Trigger
<u>14</u>	<u>Recreational club level</u>	<u>State level</u>	<u>Identified for a development squad</u>
Age	Transition from	To	Trigger
<u>22</u>	<u>Bench player (national team)</u>	<u>Starting player</u>	<u>A player in my position retired</u>
Age	Transition from	To	Trigger
<u>25</u>	<u>Regular finalist</u>	<u>Regular medallist</u>	<u>Change in technique after biomech. analysis</u>
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger
Age	Transition from	To	Trigger

YOUR FAMILY

The following questions relate to some general information about your family and their sport participation. Please tell me about your family.

MOTHER

Year of birth: _____ Nationality: _____

During the time that you lived with her, what was your mother's occupation?

Until what age did you live with your mother? _____

When you lived with your mother, did she participate in any regular physical activity?

☐ Yes ☐ No If yes, how often? _____

Did your mother ever participate in any competitive sports? ☐ Yes ☐ No

If yes, please identify the sport(s), and her highest level of representation for that sport:

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

FATHER

Year of birth: _____ Nationality: _____

During the time that you lived with him, what was your father's occupation?

Until what age did you live with your father? _____

When you lived with your father, did he participate in any regular physical activity?

☐ Yes ☐ No If yes, how often? _____

Did your father ever participate in any competitive sports? ☐ Yes ☐ No

If yes, please identify the sport(s), and his highest level of representation for that sport:

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

SIBLING ONE

Gender: ☐ Male ☐ Female

Year of birth: _____

Until what age did you live with this sibling? _____

When you lived with this sibling, did he/she participate in any regular physical activity?

☐ Yes ☐ No If yes, how often? _____

Did this sibling ever participate in any competitive sports? ☐ Yes ☐ No

If yes, please identify the sport(s), and his/her highest level of representation for that sport:

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

SIBLING TWO

Gender: ☐ Male ☐ Female

Year of birth: _____

Until what age did you live with this sibling? _____

When you lived with this sibling, did he/she participate in any regular physical activity?

☐ Yes ☐ No If yes, how often? _____

Did this sibling ever participate in any competitive sports? ☐ Yes ☐ No

If yes, please identify the sport(s), and his/her highest level of representation for that sport:

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

SIBLING THREE

Gender: ☐ Male ☐ Female

Year of birth: _____

Until what age did you live with this sibling? _____

When you lived with this sibling, did he/she participate in any regular physical activity?

☐ Yes ☐ No If yes, how often? _____

Did this sibling ever participate in any competitive sports? ☐ Yes ☐ No

If yes, please identify the sport(s), and his/her highest level of representation for that sport:

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

SIBLING FOUR

Gender: ☐ Male ☐ Female

Year of birth: _____

Until what age did you live with this sibling? _____

When you lived with this sibling, did he/she participate in any regular physical activity?

☐ Yes ☐ No If yes, how often? _____

Did this sibling ever participate in any competitive sports? ☐ Yes ☐ No

If yes, please identify the sport(s), and his/her highest level of representation for that sport:

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Sport _____ Highest level of representation _____

Is there anything else about your family that you feel may have significantly influenced your sporting career?

WHERE YOU HAVE LIVED

*The following questions relate to your various places of residence.
Please tell me about where you have lived.*

Please complete all items in the table for each different place of residence.

Suburb / Town	State / Province	Country	Postal Code	Lived here from age	Lived here until age	Reason for relocation to this residence	Who else lived with you here?
E.g. Bruce	ACT	Australia	2617	16	19	Received a sport scholarship	Team mates

Is there anything else about where you have lived that you feel may have significantly influenced your sporting career?

PARTICIPATION IN ORGANISED SPORTS

The following questions relate to your participation in organised sports other than your main sport. Please tell me about all of the organised sports that you have participated in, not including your main sport.

For each organised sport that you have participated in, please provide the following information for each year of your involvement with that sport:

Hours / Week: The average number of hours per week that you were involved with that sport – include all training and competition activities.

Months / Year: The number of months per year that you were involved with that sport.

Representation: The highest level of representation that you participated at for that sport.

Use the following codes to identify the highest level of representation that you participated at:

S = School C = Club R = Regional P = Provincial / State N = National I = International

Sport		Age																												
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
E.g. Athletics	Hours/Week					4	4	4	6	6																				
	Months/Year					3	3	3	6	6																				
	Representation					C	C	C	R	R																				
	Hours/Week																													
	Months/Year																													
	Representation																													
	Hours/Week																													
	Months/Year																													
	Representation																													
	Hours/Week																													
	Months/Year																													
	Representation																													

Table continued on next page....

Sport		Age																										
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Hours/Week																											
	Months/Year																											
	Representation																											
	Hours/Week																											
	Months/Year																											
	Representation																											
	Hours/Week																											
	Months/Year																											
	Representation																											
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	Representation																											
	Hours/Week																											
	Months/Year																											
	Representation																											
	Hours/Week																											
	Months/Year																											
	Representation																											

Is there anything else about your participation in organised sports that you feel may have significantly influenced your sporting career?

PARTICIPATION IN INFORMAL PLAYFUL SPORTING GAMES

The following questions relate to your participation in informal playful sporting games outside of the organised sport participation that you outlined earlier.
Please tell me about your participation in playful, sporting games.

Informal playful sporting games include those activities that resemble competitive sports but involve modified rules and/or equipment, with no formal instruction or supervision.

For each informal playful sporting game that you participated in, please provide the following information for each year of your involvement with that activity:

Hours / Week: The average number of hours per week that you played that activity.

Months / Year: The number of months per year that you played that activity.

Playful Activity		Age																										
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
E.g. Pick up basketball	Hours/Week											1	1	2					1	1								
	Months/Year											6	10	10					3	4								
	Hours/Week																											
	Months/Year																											
	Hours/Week																											
	Months/Year																											
	Hours/Week																											
	Months/Year																											
	Hours/Week																											
	Months/Year																											

Table continued on next page.....

INVOLVEMENT IN YOUR MAIN SPORT

The following questions relate to your involvement in your main sport.

Please tell me about your general involvement in your main sport at each year of your participation.

Please complete all items in the table for each year of your involvement in your main sport.

Hours / Week: The average number of hours per week that you were involved in your main sport – include all training and competition activities.

Months / Year: The number of months per year that you were involved in your main sport.

Number of sessions per week: The average number of sessions per week that you were involved with your main sport – do not include competitions, but do include all other types of training activities.

Frequency of competitions: The average number of competitions that you competed in for your main sport per week, month or year.

Representation: The highest level of representation that you participated at for your main sport.

Significant achievements: Any significant team selections, leadership positions, medals / championships won, records broken etc.

Main emphasis of participation: The main emphasis of your participation in your main sport i.e. the main reason for your participation.

Age	Hours/ Week	Months/ Year	Number of sessions per week	Frequency of Competitions		Level of representation	Significant achievements	Main emphasis of participation
				Number of competitions	Per week / month /year			
E.g.	4	6	2	1	Week	Club	Most improved player	Enjoyment

Table continued on next page.....

Age	Hours/ Week	Months/ Year	Number of practice sessions per week	Frequency of Competitions		Level of representation	Significant achievements	Main emphasis of participation
				Number of competitions	Per week / month /year			
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Table continued on next page.....

Age	Hours/ Week	Months/ Year	Number of practice sessions per week	Frequency of Competitions		Level of representation	Significant achievements	Main emphasis of participation
				Number of competitions	Per week / month /year			
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

Is there anything else about your general involvement in your main sport that you feel may have significantly influenced your sporting career?

Please tell me about the nature of your practice for your main sport at each year of your participation.

Please complete all items in the table for each year of your involvement in your main sport.

Supervised group practice: Any practice activities that were completed as part of a team / group, during which a coach was present.
E.g. Team practice

Supervised individual practice: Any practice activities that were completed one-on-one with a coach, but no other team mates.

E.g. Private lessons.

Unsupervised individual practice: Any practice activities that were completed on your own, without direct coach supervision, that you undertook with the aim of performance improvement. E.g. Shooting baskets.

Organised competition: Any formal competitive activities or games in which you competed against other teams / athletes.

E.g. Interclub tournament.

Unsupervised play: Any informal, playful activities relating to your main sport that you engaged in either on your own or as part of a group, during with the emphasis was on fun rather than performance improvement. E.g. Pick-up basketball.

Indirect involvement: Any passive activities relating to your main sport that you engaged in either on your own or as part of a group.
E.g. Watching your sport on television, reading books about your sport etc.

Sessions / Week: The average number of sessions per week that you were involved in this type of activity.

Hours / Week: The average number of hours per week that you were involved in this type of activity.

Months / Year: The number of months per year that you were involved in the type of activity.

Please include any and all types of practice (e.g. technique, tactical, physical conditioning, mental skills, video analysis etc.)

Age							
	Sessions / Week	Supervised group practice	Supervised individual practice	Unsupervised individual practice	Organised competition	Unsupervised play	Indirect involvement
E.g.	Hours / Week	2	1	2	1	2	3
	Months / Year	4	1	1	1	1	1
		6	6	12	6	10	12

Table continued on next page.....

Age		Supervised group practice	Supervised individual practice	Unsupervised individual practice	Organised competition	Unsupervised play	Indirect involvement
4	Sessions / Week						
	Hours / Week						
	Months / Year						
5	Sessions / Week						
	Hours / Week						
	Months / Year						
6	Sessions / Week						
	Hours / Week						
	Months / Year						
7	Sessions / Week						
	Hours / Week						
	Months / Year						
8	Sessions / Week						
	Hours / Week						
	Months / Year						
9	Sessions / Week						
	Hours / Week						
	Months / Year						
10	Sessions / Week						
	Hours / Week						
	Months / Year						
11	Sessions / Week						
	Hours / Week						
	Months / Year						
12	Sessions / Week						
	Hours / Week						
	Months / Year						
13	Sessions / Week						
	Hours / Week						
	Months / Year						
14	Sessions / Week						
	Hours / Week						
	Months / Year						

Table continued on next page.....

Age		Supervised group practice	Supervised individual practice	Unsupervised individual practice	Organised competition	Unsupervised play	Indirect involvement
15	Sessions / Week						
	Hours / Week						
	Months / Year						
16	Sessions / Week						
	Hours / Week						
	Months / Year						
17	Sessions / Week						
	Hours / Week						
	Months / Year						
18	Sessions / Week						
	Hours / Week						
	Months / Year						
19	Sessions / Week						
	Hours / Week						
	Months / Year						
20	Sessions / Week						
	Hours / Week						
	Months / Year						
21	Sessions / Week						
	Hours / Week						
	Months / Year						
22	Sessions / Week						
	Hours / Week						
	Months / Year						
23	Sessions / Week						
	Hours / Week						
	Months / Year						
24	Sessions / Week						
	Hours / Week						
	Months / Year						
25	Sessions / Week						
	Hours / Week						
	Months / Year						

Table continued on next page.....

Age		Supervised group practice	Supervised individual practice	Unsupervised individual practice	Organised competition	Unsupervised play	Indirect involvement
26	Sessions / Week						
	Hours / Week						
	Months / Year						
27	Sessions / Week						
	Hours / Week						
	Months / Year						
28	Sessions / Week						
	Hours / Week						
	Months / Year						
29	Sessions / Week						
	Hours / Week						
	Months / Year						
30	Sessions / Week						
	Hours / Week						
	Months / Year						

Is there anything else about the nature of your practice that you feel may have significantly influenced your sporting career?

Please tell me about the types of training you participated in for your main sport at each year of your participation.

Please complete all items in the table for each year of your involvement in your main sport.

Technique / skills training: Any practice activities focussed on technique or skill improvement / refinement.

Tactical / games based training: Any practice activities focussed on match tactics / strategy and/or simulated games / competition.

Physical conditioning / weights: Any practice activities focussed on improving physical fitness and conditioning – may include gym and/or field based activities.

Mental / psychological skills training: Any practice activities focussed on the use of mental / psychological skills.

Recovery: Any practice activities focussed on recovery techniques – may include active or passive recovery techniques.

Video analysis / review: Any practice activities focussed on video analysis / review of your own performance, upcoming opponents, or "expert performers".

Sport related study: Any activities focussed on learning about your sport – may include reading, watching videos or talking to coaches and other athletes about your sport.

Watching your sport: Time spent watching matches / competitions of your own sport – may include live, televised or recorded matches / events.

Hours / Week: The average number of hours per week that you were involved in this type of activity.

Months / Year: The number of months per year that you were involved in the type of activity.

Age			Technique / skills training	Tactical / games based training	Physical conditioning / weights	Mental / psychological skills training	Recovery	Video analysis / review	Sport related study	Watching your sport
	Hours / Week	Months / Year								
E.g.	1	6	1	6	2	0	0	0	1	1
					12	0	0	0	8	8

Table continued on next page....

Age		Technique / skills training	Tactical / games based training	Physical conditioning / weights	Mental / psychological skills training	Recovery	Video analysis / review	Sport related study	Watching your sport
4	Hours / Week								
	Months / Year								
5	Hours / Week								
	Months / Year								
6	Hours / Week								
	Months / Year								
7	Hours / Week								
	Months / Year								
8	Hours / Week								
	Months / Year								
9	Hours / Week								
	Months / Year								
10	Hours / Week								
	Months / Year								
11	Hours / Week								
	Months / Year								
12	Hours / Week								
	Months / Year								
13	Hours / Week								
	Months / Year								
14	Hours / Week								
	Months / Year								
15	Hours / Week								
	Months / Year								
16	Hours / Week								
	Months / Year								
17	Hours / Week								
	Months / Year								
18	Hours / Week								
	Months / Year								
19	Hours / Week								
	Months / Year								
20	Hours / Week								
	Months / Year								

Table continued on next page.....

Age		Technique / skills training	Tactical / games based training	Physical conditioning / weights	Mental / psychological skills training	Recovery	Video analysis / review	Sport related study	Watching your sport
21	Hours / Week								
	Months / Year								
22	Hours / Week								
	Months / Year								
23	Hours / Week								
	Months / Year								
24	Hours / Week								
	Months / Year								
25	Hours / Week								
	Months / Year								
26	Hours / Week								
	Months / Year								
27	Hours / Week								
	Months / Year								
28	Hours / Week								
	Months / Year								
29	Hours / Week								
	Months / Year								
30	Hours / Week								
	Months / Year								

Is there anything else about the types of training that you participated in that you feel may have significantly influenced your sporting career?

Please tell me about your involvement in competition for your main sport at each year of your participation.

Please complete all items in the table for each year of your involvement in your main sport.

Age groups competed in: List all of the age group classifications that you competed in during each year of your involvement in your main sport e.g. 15/16 years, under 18's, opens etc.

Level of representation: Identify the level of representation that you competed at for each age group classification identified e.g. school, club, regional, state, national, international.

Frequency of competition: Identify the average number of competitions that you competed in per week, month or year, for each age group classification and level of representation identified.

Average success: The average result you achieved when competing within each age group classification and level of representation identified e.g. mostly top 3, regular finalist, middle of the pack, more wins than losses etc.

Age	Age groups competed in	Level of representation	Frequency of competitions		Average success
			Number of competitions	Per week / month / year	
E.g.	Under 14's	Club	1	Week	Equal wins and losses
	Under 14's	State	1 tournament (7 games)	Year	3 rd or 4 th overall in tournament
	Under 16's	Club	1	Month	Mostly a bench player, but our team regularly won

Table continued on next page.....

Age	Age groups competed in	Level of representation	Frequency of competitions		Average success
			Number of competitions	Per week / month / year	
4					
5					
6					
7					
8					

Table continued on next page.....

Age	Age groups competed in	Level of representation	Frequency of competitions		Average success
			Number of competitions	Per week / month / year	
9					
10					
11					
12					
13					

Table continued on next page.....

Age	Age groups competed in	Level of representation	Frequency of competitions		Average success
			Number of competitions	Per week / month / year	
14					
15					
16					
17					
18					

Table continued on next page.....

Age	Age groups competed in	Level of representation	Frequency of competitions		Average success
			Number of competitions	Per week / month / year	
19					
20					
21					
22					
23					

Table continued on next page.....

Age	Age groups competed in	Level of representation	Frequency of competitions		Average success
			Number of competitions	Per week / month / year	
24					
25					
26					
27					
28					

Table continued on next page.....

Age	Age groups competed in	Level of representation	Frequency of competitions		Average success
			Number of competitions	Per week / month / year	
29					
30					

Is there anything else about your competition involvement that you feel may have significantly influenced your sporting career?

Please tell me about the coaches that you have trained with for your main sport.

Please complete all items in the table for each coach you have trained with for your main sport.

Please include all coaches including head coaches, assistant coaches, specialist coaches etc.

Role of coach: Please indicate if this coach was your head coach, assistant coach, specialist coach etc.

Trained with this coach from age: Please indicate the age at which you began training with this coach.

Trained with this coach until age: Please indicate the age at which you ceased training with this coach.

Level(s) of representation with this coach: Please list all of the levels of representation that you competed at with this coach.

Coach	Role of coach	Trained with this coach from age	Trained with this coach until age	Level(s) of representation with this coach
<i>E.g.</i>	<i>Head coach (only coach)</i>	<i>7</i>	<i>14</i>	<i>Club Regional</i>
1				
2				
3				
4				
5				
6				
7				

Table continued on next page.....

Coach	Role of coach	Trained with this coach from age	Trained with this coach until age	Level(s) of representation with this coach
8				
9				
10				
11				
12				

Is there anything else about your coaches that you feel may have significantly influenced your sporting career?

Please tell me about your access to and utility of support services during each year of your involvement in your main sport.

Please complete all items in the table for each year of your involvement in your main sport.

Access: Was this support service available to you if you required it, regardless of whether you actually utilised it or not? E.g. Did you have a team doctor?

Utility: If available, did you utilise this support service. E.g. If you had a team doctor, did you ever undergo treatment with them?

Please indicate yes or no for each support service for each year of your involvement in your main sport.

Age	Medicine	Physiotherapy	Massage	Psychology	Nutrition	Physiology	Biomechanics	Performance Analysis	Other (Please list)
E.g.	Access	Yes	No	Yes	Yes	No	No	Yes	Skill Acquisition Yes
	Utility	Yes	No	No	Yes	No	No	Yes	
4	Access								
	Utility								
5	Access								
	Utility								
6	Access								
	Utility								
7	Access								
	Utility								
8	Access								
	Utility								
9	Access								
	Utility								
10	Access								
	Utility								
11	Access								
	Utility								
12	Access								
	Utility								

Table continued on next page...

Age		Medicine	Physiotherapy	Massage	Psychology	Nutrition	Physiology	Biomechanics	Performance Analysis	Other (Please list)
<i>E.g.</i>	Access									
	Utility									
13	Access									
	Utility									
14	Access									
	Utility									
15	Access									
	Utility									
16	Access									
	Utility									
17	Access									
	Utility									
18	Access									
	Utility									
19	Access									
	Utility									
20	Access									
	Utility									
21	Access									
	Utility									
22	Access									
	Utility									
23	Access									
	Utility									
24	Access									
	Utility									
25	Access									
	Utility									

Table continued on next page...

Age		Medicine	Physiotherapy	Massage	Psychology	Nutrition	Physiology	Biomechanics	Performance Analysis	Other (Please list)
26	Access									
	Utility									
27	Access									
	Utility									
28	Access									
	Utility									
29	Access									
	Utility									
30	Access									
	Utility									

Is there anything else about access to and utility of support services that you feel may have significantly influenced your sporting career?

Please tell me about any significant injuries or illnesses that you have endured while involved in your main sport.

Please complete all items in the table for each injury or illness that you have endured.

Age: What age were you when you endured this injury / illness?

Chronic or acute: Was this injury / illness related to a long term condition (chronic) or was its onset sudden (acute)?

Total time affected: In total, how many weeks or months were you affected by this injury / illness?

Total time physical unable to participate in main sport: How many weeks or months were you physically unable to participate in your main sport due to this injury or illness?

Total time on reduced training load: How many weeks or months were you on a reduced training load due to this injury / illness (not including the time that you were unable to participate at all)?

Number of competitions missed: How many competitions did you miss due to this injury / illness?

Injury	Age	Chronic or acute?	Total time affected		Total time physically unable to participate in main sport		Total time on reduced training load		Number of competitions missed
			How long?	Weeks or months?	How long?	Weeks or months?	How long?	Weeks or months?	
<i>E.g</i>	22	<i>Acute</i>	3	Months	2	months	1	month	6
1									
2									
3									
4									
5									
6									

Is there anything else about your injuries or illnesses that you feel may have significantly influenced your sporting career?

Aside from injury or illness, please tell me about any other times that you had any significant time away from your main sport.

Please complete all items in the table for each period of significant time away from your main sport.

Please do not include time of due to injury or illness

Age: What age were you when you had this significant time away from your main sport?

Reason for time away: What was the main reason for this time away from your main sport?

Total time away from training: In total, how long were you away from training during this period?

Total time away from competition: In total, how long were you away from competition during this period?

Significant time off	Age	Reason for time away	Total time away from training		Total time away from competition	
			How long?	Weeks, months or years?	How long?	Weeks, months or years?
<i>E.g</i>	18	<i>Focus on school</i>	1	<i>year</i>	18	<i>months</i>
1						
2						
3						
4						
5						
6						
7						
8						

Is there anything else about your time away from your sport that you feel may have significantly influenced your sporting career?

That completes the Developmental History of Athletes Questionnaire.

Thank you very much for your assistance, time and patience.

Appendix B.

Ethical Approval for Study Phase Two: Establishing Validity and Reliability of the Developmental History of Athletes Questionnaire



MEMO

TO Dr. Clare MacMahon
School of Sports & Exercise Science
Footscray Park Campus

DATE 01/07/2009

FROM Dr. Mary Weaven
Acting Chair
Arts, Education & Human Development Human Research
Ethics Subcommittee

SUBJECT Ethics Application – HRETH 09/104

Dear Dr. MacMahon,

Thank you for resubmitting this application for ethical approval of the project:

HRETH09/104 Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire.

The proposed research project has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)', by the Chair, Faculty of Arts, Education & Human Development Human Research Ethics Committee. Approval has been granted from 01/07/2009 to 22/07/2010.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date (by 01/07/2010) or upon the completion of the project (if earlier). A report proforma may be downloaded from the VUHREC web site at: <http://research.vu.edu.au/hrec.php>

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment.

If you have any further queries please do not hesitate to contact me on 99 19 7515.

On behalf of the Committee, I wish you all the best for the conduct of the project.

Dr. Mary Weaven
Acting Chair
Faculty of Arts, Education & Human Development Human Research Ethics Subcommittee



Australian Institute of Sport

MINUTE

TO: Ms Melissa Hopwood **CC:** Dr Damian Farrow
FROM: Ms Helene Kay
SUBJECT: Approval from AIS Ethics Committee **DATE:** 24th June 2009

At the last meeting of the AIS Ethics Committee held on the 16th of June 2009, the Committee gave consideration to minor variations within your submission titled '*Designing the DHAQ; Construction and Validation of the developmental history of athletes questionnaire*'. The Committee saw no ethical reason why your project should not proceed subject to:

- The inclusion of the AIS Ethics Committee contact details on the information to participants.
- The Clarification and appropriate amendments of documents to reflect only one 'principal' researcher.

The approval number for this project remains as 20090604.

It is a requirement of the AIS Ethics Committee that the Principal Researcher (you) advise all researchers involved in the study of Ethics Committee approval and any conditions of that approval. You are also required to advise the Ethics Committee immediately (via the Secretary) of:

any proposed changes to the research design,
any adverse events that may occur,

Researchers are required to submit **annual status reports** to the secretary of the AIS Ethics Committee until completion of the project. Details of status report requirements are contained in the "Guidelines" for ethics submissions.

Failure to comply with the above will render ethics approval null and void.

If you have any questions regarding this matter, please don't hesitate to contact me on (02) 6214 1577.


Sincerely
Helene Kay
Assistant Secretary, AIS-EC

Appendix C.

Participant Information Sheets and Consent Forms for Study Phase Two: Establishing Validity and Reliability of the Developmental History of Athletes Questionnaire



INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

Information for Athletes

You are invited to participate

You are invited to participate in a research project entitled "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire".

This project is being conducted by a student researcher, Melissa Hopwood, as part of a PhD study at Victoria University under the supervision of Dr. Clare MacMahon from the School of Sport and Exercise Science.

Project explanation

We are interested in designing a questionnaire that will provide information relating to the developmental histories of elite level athletes. This questionnaire will subsequently be used to identify commonalities in the pathways that elite athletes follow in attaining expertise. Information obtained from the completion of the questionnaire may be used to provide recommendations regarding the conditions of sport participation and practice that are optimal for the development of sport expertise.

What will I be asked to do?

You are invited to be involved in the questionnaire design phase of this project. Before we can administer the questionnaire to a large number of athletes, we must first establish that the questionnaire yields accurate responses.

Your involvement in this research will require you to:

- Complete a questionnaire on **two** separate occasions, involving questions relating to:
 - Basic demographic information;
 - Your training history for your main sport;
 - Performance milestones for your main sport;
 - Your participation in other organised sporting activities;
 - Your involvement in playful sporting games; and
 - Your immediate family's involvement in representative sports.
- Participate in a face-to-face interview with the student researcher, Melissa Hopwood, in which the above areas will be discussed in further detail.
 - The face-to-face interview will be recorded using a voice recorder in order to maximise the accuracy of transcription of your responses.

All of your responses from both the questionnaire and the face-to-face interview will be identified using a subject code. As such, you will remain anonymous throughout the course of the research, and your name will at no stage be linked to your responses.

What will I gain from participating?

Your participation in this research will provide considerable assistance in the design of the Developmental History of Athletes Questionnaire (DHAQ). This questionnaire will subsequently be used to identify important recommendations relating to the conditions of sport participation and practice that are optimal for the development of sport expertise. These recommendations will be of high interest to coaches, athletes, parents, and sport scientists, and could assist in the development of future sporting champions.

How will the information I give be used?

The information you provide for this research will be used to modify the questionnaire, so that it can be completed by a large number of athletes, with confidence in the accuracy of the responses. The findings from this research are intended to be published in a scientific journal and presented to the sport science community. Your anonymity will be preserved at all times throughout the reporting of the findings.

What are the potential risks of participating in this project?

The potential risks of participating in this research are minimal.

It is unlikely that you will experience any physical difficulty whilst completing the questionnaire or the interview, however, please feel free to report any physical discomfort, and appropriate measures will be taken.

You will be required to recall information relating to your past, however the majority of the information required relates to your previous sporting involvement, so it is unexpected that this will cause any psychological distress. If you do not wish to answer a particular question, please feel free to refuse to respond and be aware that there will be no ramification for refusing to respond to any questions. In addition, a registered psychologist, Dr. Harriet Speed is available to provide free-of-charge psychological services should you encounter any distress as a result of the data collection procedures. Dr. Speed can be contacted on (03) 9919 5412 or via email at harriet.speed@vu.edu.au.

As mentioned previously, your name will not be associated with any of your responses, and procedures are in place to ensure that the information you provide remains confidential, and your anonymity is maintained. If you wish to obtain further information regarding these procedures, please feel free to contact any of the researchers listed below, and we will be happy to assist in your request.

If at any time you no longer wish to be involved in the research, you will be free to withdraw. Your withdrawal will not jeopardise you in any way. In the case of your withdrawal, any information you have previously provided will be destroyed.

If you have any further questions relating to the potential risks of participating in this research, please contact any of the researchers listed below, and we will be happy to assist you.

How will this project be conducted?

Your participation in this research will involve 3 sessions:

- Session 1
 - Completion of *either* the questionnaire *or* the face-to-face interview.
- Session 2
 - Completion of *either* the questionnaire *or* the face-to-face interview – whichever was not completed during Session 1.
- Session 3
 - Completion of the questionnaire for the second time.

Sessions 1 and 2 will be conducted within a 2-week period at the Australian Institute of Sport. Session 3 will be conducted 3 months following the completion of Session 2.

On each occasion, the questionnaire will take approximately 1 hour to complete. A researcher will be present during Session 1/2 to assist you if required, however Session 3 will be completed in the absence of a researcher. Response types vary from short open response, to selection of an option from a list.

The interview will take approximately 2 hours to complete. One or possibly two researchers will be present, and your responses will be recorded to ensure accuracy of transcription for analysis. The interview will be semi-structured, and will involve open-ended questions for you to elaborate in as much detail as is required.

Who is conducting the study?

Principal Investigator:

Dr. Clare MacMahon
Victoria University – School of Sport and Exercise Science
clare.macmahon@vu.edu.au
(03) 9919 5410

Student Investigator:

Ms. Melissa Hopwood
Victoria University – School of Sport and Exercise Science
melissa.hopwood@live.vu.edu.au

Associate Investigator:

Dr. Damian Farrow
Australian Institute of Sport – Skill Acquisition
damian.farrow@ausport.gov.au
0408 445 701

Associate Investigator:

Dr. Joseph Baker
York University (Canada) – Lifespan Health and Performance Laboratory
bakerj@yorku.ca
+ 1 416 736 2100 (Extension 22361)

Any queries about your participation in this project may be directed to the Principal Researcher listed above.

In accordance with the National Health and Medical Research Council's guidelines, this study has been cleared by both the Victoria University Human Research Ethics Committee and the Human Ethics Committee at the Australian Institute of Sport. If you have any queries or complaints about the project, or the way you have been treated, you are of course, free to contact either the Secretary of the Victoria University Human Research Ethics Committee by mail at Victoria University, PO Box 14428, Melbourne, VIC, 8001 or by phone (03) 9919 4781, or the Secretary of the AIS Ethics Committee, Mr John Williams, on 02 6214 1816.



CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION FOR ATHLETES:

We would like to invite you to be a part of a study entitled "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire".

We are interested in designing a questionnaire that will provide information relating to the developmental histories of elite level athletes. This questionnaire will subsequently be used to identify commonalities in the pathways that elite athletes follow in attaining expertise. Information obtained from the completion of the questionnaire may be used to provide recommendations regarding the conditions of sport participation and practice that are optimal for the development of sport expertise.

CERTIFICATION BY SUBJECT

I, _____ (participant's name)

of _____ (participant's suburb)

certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire", being conducted at Victoria University by Dr. Clare MacMahon, Ms. Melissa Hopwood, Dr. Damian Farrow, and Dr. Joseph Baker.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by Melissa Hopwood, and that I freely consent to participation involving the below mentioned procedures:

- Completion of a questionnaire on **two** separate occasions;
- Participation in a face to face interview.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I certify that I have the opportunity to access free-of-charge psychological services from Dr. Harriet Speed (03 9919 5412; harriet.speed@vu.edu.au) in the event of any distress resulting from participation in this study.

I have been informed that the information I provide will be kept confidential.

Signed: _____

Date: _____

Any queries about your participation in this project may be directed to the principal researcher:

Dr. Clare MacMahon
clare.macmahon@vu.edu.au
(03) 9919 5410

In accordance with the National Health and Medical Research Council's guidelines, this study has been cleared by both the Victoria University Human Research Ethics Committee and the Human Ethics Committee at the Australian Institute of Sport. If you have any queries or complaints about the project, or the way you have been treated, you are of course, free to contact either the Secretary of the Victoria University Human Research Ethics Committee by mail at Victoria University, PO Box 14428, Melbourne, VIC, 8001 or by phone (03) 9919 4781, or the Secretary of the AIS Ethics Committee, Mr John Williams, on 02 6214 1816.



INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

Information for Parents

You are invited to participate

You are invited to participate in a research project entitled "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire".

This project is being conducted by a student researcher, Melissa Hopwood, as part of a PhD study at Victoria University under the supervision of Dr. Clare MacMahon from the School of Sport and Exercise Science.

Project explanation

We are interested in designing a questionnaire that will provide information relating to the developmental histories of elite level athletes. This questionnaire will subsequently be used to identify commonalities in the pathways that elite athletes follow in attaining expertise. Information obtained from the completion of the questionnaire may be used to provide recommendations regarding the conditions of sport participation and practice that are optimal for the development of sport expertise.

You are invited to be involved in the questionnaire design phase of this project. Before we can administer the questionnaire to a large number of athletes, we must first establish that the questionnaire yields accurate responses. One step in assessing the accuracy of the questionnaire involves comparing the responses given by an athlete, with those given by someone else who had a considerable involvement with the athlete at the time (i.e. a parent or a coach).

What will I be asked to do?

Your involvement in this research will require you to participate in a telephone interview with the student researcher, Melissa Hopwood, involving questions relating to:

- Basic demographic information;
- Your child's training history for their main sport;
- Your child's performance milestones for their main sport;
- Your child's participation in other organised sporting activities;
- Your child's involvement in playful sporting games; and
- Your immediate family's involvement in representative sports.

The phone call will be recorded in order to maximise the accuracy of transcription of your responses.

All of your responses will be identified using a subject code. As such, you will remain anonymous throughout the course of the research, and your name will at no stage be linked to your responses.

What will I gain from participating?

Your participation in this research will provide considerable assistance in the design of the Developmental History of Athletes Questionnaire. This questionnaire will subsequently be used to identify important recommendations relating to the conditions of sport participation and practice that are optimal for the development of sport expertise. These recommendations will be of high interest to coaches, athletes, parents, and sport scientists, and could assist in the development of future sporting champions.

How will the information I give be used?

The information you provide for this research will be used to modify the Developmental History of Athletes Questionnaire, so that it can be completed by a large number of athletes, with confidence in the accuracy of the responses. The findings from this research are intended to be published in a scientific journal and presented to the sport science community. Your anonymity will be preserved at all times throughout the reporting of the findings.

What are the potential risks of participating in this project?

The potential risks of participating in this research are minimal.

It is unlikely that you will experience any physical difficulty whilst participating in the interview, however, you will be able to stop the interview at any time, and an alternate time to complete the interview can be arranged.

You will be required to recall information relating to your child's past, however the majority of the information required relates to their previous sporting involvement, so it is unexpected that this will cause any psychological distress. If you do not wish to answer a particular question, please feel free to refuse to respond and be aware that there will be no ramification for refusing to respond to any questions. In addition, a registered psychologist, Dr. Harriet Speed is available to provide free-of-charge psychological services should you encounter any distress as a result of the data collection procedures. Dr. Speed can be contacted on (03) 9919 5412 or via email at harriet.speed@vu.edu.au.

As mentioned previously, your name will not be associated with any of your responses, and procedures are in place to ensure that the information you provide remains confidential, and your anonymity is maintained. If you wish to obtain further information regarding these procedures, please feel free to contact any of the researchers listed below, and we will be happy to assist in your request.

If at any time you no longer wish to be involved in the research, you will be free to withdraw. Your withdrawal will not jeopardise you, or your child in any way. In the case of your withdrawal, any information you have previously provided will be destroyed.

If you have any further questions relating to the potential risks of participating in this research, please contact any of the researchers listed below, and we will be happy to assist you.

How will this project be conducted?

Your participation in this research will involve 1 session only, during which the telephone interview will be conducted.

The interview will take approximately 1-2 hours to complete, and will be scheduled at a time that suits you. The researcher will phone you so as to minimise any costs associated with the call. The interview will be semi-structured, and will involve open-ended questions for you to elaborate in as much detail as is required. With your permission, the phone call will be recorded to ensure accuracy of transcription for analysis.

Who is conducting the study?

Principal Investigator:

Dr. Clare MacMahon
Victoria University – School of Sport and Exercise Science
clare.macmahon@vu.edu.au
(03) 9919 5410

Student Investigator:

Ms. Melissa Hopwood
Victoria University – School of Sport and Exercise Science
melissa.hopwood@live.vu.edu.au

Associate Investigator:

Dr. Damian Farrow
Australian Institute of Sport – Skill Acquisition
damian.farrow@ausport.gov.au
0408 445 701

Associate Investigator:

Dr. Joseph Baker
York University (Canada) – Lifespan Health and Performance Laboratory
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Any queries about your participation in this project may be directed to the Principal Researcher listed above.

In accordance with the National Health and Medical Research Council's guidelines, this study has been cleared by both the Victoria University Human Research Ethics Committee and the Human Ethics Committee at the Australian Institute of Sport. If you have any queries or complaints about the project, or the way you have been treated, you are of course, free to contact either the Secretary of the Victoria University Human Research Ethics Committee by mail at Victoria University, PO Box 14428, Melbourne, VIC, 8001 or by phone (03) 9919 4781, or the Secretary of the AIS Ethics Committee, Mr John Williams, on 02 6214 1816.



CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION FOR PARENTS:

We would like to invite you to be a part of a study entitled "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire".

We are interested in designing a questionnaire that will provide information relating to the developmental histories of elite level athletes. This questionnaire will subsequently be used to identify commonalities in the pathways that elite athletes follow in attaining expertise. Information obtained from the completion of the questionnaire may be used to provide recommendations regarding the conditions of sport participation and practice that are optimal for the development of sport expertise.

CERTIFICATION BY SUBJECT

I, _____ (participant's name)

of _____ (participant's suburb)

certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire", being conducted at Victoria University by Dr. Clare MacMahon, Ms. Melissa Hopwood, Dr. Damian Farrow, and Dr. Joseph Baker.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by Melissa Hopwood, and that I freely consent to participation involving the below mentioned procedures:

- Participation in a telephone interview.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me or my child in any way.

I certify that I have the opportunity to access free-of-charge psychological services from Dr. Harriet Speed (03 9919 5412; harriet.speed@vu.edu.au) in the event of any distress resulting from participation in this study.

I have been informed that the information I provide will be kept confidential.

Signed: _____

Date: _____

Any queries about your participation in this project may be directed to the principal researcher:

Dr. Clare MacMahon
clare.macmahon@vu.edu.au
(03) 9919 5410

In accordance with the National Health and Medical Research Council's guidelines, this study has been cleared by both the Victoria University Human Research Ethics Committee and the Human Ethics Committee at the Australian Institute of Sport. If you have any queries or complaints about the project, or the way you have been treated, you are of course, free to contact either the Secretary of the Victoria University Human Research Ethics Committee by mail at Victoria University, PO Box 14428, Melbourne, VIC, 8001 or by phone (03) 9919 4781, or the Secretary of the AIS Ethics Committee, Mr John Williams, on 02 6214 1816.



INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

Information for Coaches

You are invited to participate

You are invited to participate in a research project entitled "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire".

This project is being conducted by a student researcher, Melissa Hopwood, as part of a PhD study at Victoria University under the supervision of Dr. Clare MacMahon from the School of Sport and Exercise Science.

Project explanation

We are interested in designing a questionnaire that will provide information relating to the developmental histories of elite level athletes. This questionnaire will subsequently be used to identify commonalities in the pathways that elite athletes follow in attaining expertise. Information obtained from the completion of the questionnaire may be used to provide recommendations regarding the conditions of sport participation and practice that are optimal for the development of sport expertise.

You are invited to be involved in the questionnaire design phase of this project. Before we can administer the questionnaire to a large number of athletes, we must first establish that the questionnaire yields accurate responses. One step in assessing the accuracy of the questionnaire involves comparing the responses given by an athlete, with those given by someone else who had a considerable involvement with the athlete at the time (i.e. a parent or a coach).

What will I be asked to do?

Your involvement in this research will require you to complete a telephone interview with the student researcher, Melissa Hopwood, involving questions relating to your athlete's training history and performance milestones.

With your permission, the phone call will be recorded in order to maximise the accuracy of transcription of your responses.

All of your responses will be identified using a subject code. As such, you will remain anonymous throughout the course of the research, and your name will at no stage be linked to your responses.

What will I gain from participating?

Your participation in this research will provide considerable assistance in the design of the Developmental History of Athletes Questionnaire. This questionnaire will subsequently be used to identify important recommendations relating to the conditions of sport participation and practice that are optimal for the development of sport expertise. These recommendations will be of high interest to coaches, athletes, parents, and sport scientists, and could assist in the development of future sporting champions.

How will the information I give be used?

The information you provide for this research will be used to modify the Developmental History of Athletes Questionnaire, so that it can be completed by a large number of athletes, with confidence in the accuracy of the responses. The findings from this research are intended to be published in a scientific journal and presented to the sport science community. Your anonymity will be preserved at all times throughout the reporting of the findings.

What are the potential risks of participating in this project?

The potential risks of participating in this research are minimal.

It is unlikely that you will experience any physical difficulty whilst participating in the interview, however, you will be able to stop the interview at any time, and an alternate time to complete the interview can be arranged.

You will be required to recall information relating to your athlete's past, however the majority of the information required relates to their previous sporting involvement, so it is unexpected that this will cause any psychological distress. If you do not wish to answer a particular question, please feel free to refuse to respond and be aware that there will be no ramification for refusing to respond to any questions. In addition, a registered psychologist, Dr. Harriet Speed is available to provide free-of-charge psychological services should you encounter any distress as a result of the data collection procedures. Dr. Speed can be contacted on (03) 9919 5412 or via email at harriet.speed@vu.edu.au.

As mentioned previously, your name will not be associated with any of your responses, and procedures are in place to ensure that the information you provide remains confidential, and your anonymity is maintained. If you wish to obtain further information regarding these procedures, please feel free to contact any of the researchers listed below, and we will be happy to assist in your request.

If at any time you no longer wish to be involved in the research, you will be free to withdraw. Your withdrawal will not jeopardise you, or your athlete in any way. In the case of your withdrawal, any information you have previously provided will be destroyed.

If you have any further questions relating to the potential risks of participating in this research, please contact any of the researchers listed below, and we will be happy to assist you.

How will this project be conducted?

Your participation in this research will involve 1 session only, during which the telephone interview will be conducted.

The interview will take approximately 1 hour to complete, and will be scheduled at a time that suits you. The researcher will phone you so as to minimise any costs associated with the call. The interview will be semi-structured, and will involve open-ended questions for you to elaborate in as much detail as is required. With your permission, the phone call will be recorded to ensure accuracy of transcription for analysis.

Who is conducting the study?

Principal Investigator:

Dr. Clare MacMahon
Victoria University – School of Sport and Exercise Science
clare.macmahon@vu.edu.au
(03) 9919 5410

Student Investigator:

Ms. Melissa Hopwood
Victoria University – School of Sport and Exercise Science
melissa.hopwood@live.vu.edu.au

Associate Investigator:

Dr. Damian Farrow
Australian Institute of Sport – Skill Acquisition
damian.farrow@ausport.gov.au
0408 445 701

Associate Investigator:

Dr. Joseph Baker
York University (Canada) – Lifespan Health and Performance Laboratory
bakerj@yorku.ca
+ 1 416 736 2100 (Extension 22361)

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CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION FOR COACHES:

We would like to invite you to be a part of a study entitled "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire".

We are interested in designing a questionnaire that will provide information relating to the developmental histories of elite level athletes. This questionnaire will subsequently be used to identify commonalities in the pathways that elite athletes follow in attaining expertise. Information obtained from the completion of the questionnaire may be used to provide recommendations regarding the conditions of sport participation and practice that are optimal for the development of sport expertise.

CERTIFICATION BY SUBJECT

I, _____ (participant's name)

of _____ (participant's suburb)

certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study "Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire", being conducted at Victoria University by Dr. Clare MacMahon, Ms. Melissa Hopwood, Dr. Damian Farrow, and Dr. Joseph Baker.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by Melissa Hopwood, and that I freely consent to participation involving the below mentioned procedures:

- Participation in a telephone interview.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me or my athlete in any way.

I certify that I have the opportunity to access free-of-charge psychological services from Dr. Harriet Speed (03 9919 5412; harriet.speed@vu.edu.au) in the event of any distress resulting from participation in this study.

I have been informed that the information I provide will be kept confidential.

Signed: _____

Date: _____

Any queries about your participation in this project may be directed to the principal researcher:

Dr. Clare MacMahon
clare.macmahon@vu.edu.au
(03) 9919 5410

In accordance with the National Health and Medical Research Council's guidelines, this study has been cleared by both the Victoria University Human Research Ethics Committee and the Human Ethics Committee at the Australian Institute of Sport. If you have any queries or complaints about the project, or the way you have been treated, you are of course, free to contact either the Secretary of the Victoria University Human Research Ethics Committee by mail at Victoria University, PO Box 14428, Melbourne, VIC, 8001 or by phone (03) 9919 4781, or the Secretary of the AIS Ethics Committee, Mr John Williams, on 02 6214 1816.

Appendix D.

Study Phase Two Athlete Interview Guide

Interview Procedures – Athlete Interviews

Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire

Introduction

The purpose of this study is to develop a questionnaire that will help us to learn more about the developmental pathways of elite athletes. You have been invited to participate in this process because you are recognised as being an elite level performer within your sport. Our hope is to determine commonalties in the developmental histories and the practice conditions experienced by elite athletes, so that recommendations can be made relating to the optimal conditions conducive to the development of sport expertise. To do this we are conducting a series of questionnaires and interviews, some of which will be done in a chart format. Your assistance in completing this interview and other parts of the study is greatly appreciated.

Section 1 – Places of Residence

Let's get started, first I would like you to think about all the places you have lived, and fill in this "places of residence" chart with me.

<Interviewer produce Chart 1 – Places of residence>

Can you please list the location of all of the houses you have ever lived in?

<Fill in suburb, state, country, and postal code>

What ages were you when you lived at each of these houses?

<Fill in lived here from age and lived here until age>

Each time you moved house, can you remember why you moved?

<Fill in reason for relocation>

For each house you lived in, can you please tell me who else lived with you there?

<Fill in who else lived with you>

Chart 1 – Places of residence

Suburb / Town	State / Province	Country	Postal Code	Lived here from age	Lived here until age	Reason for relocation to this residence	Who else lived with you here?
<i>E.g. Bilgola Plateau</i>	<i>NSW</i>	<i>AUS</i>	<i>2107</i>	<i>Birth</i>	<i>15</i>	<i>Lived here from birth</i>	<i>Mum, dad, brother</i>

Section 2 - Early activities

Next, I would like to focus on the activities that you were involved in when you were young. In this chart <Interviewer produce Chart 2 – Early activities> I would like to ask you to list all of the activities you have been involved in outside of mandatory school activities, for example music, dance, play and other domains of activity. I am also interested in your early sport involvement. Looking back over your entire life please tell me of any type of activity that you engaged in on a regular basis before you decided to specialise in [sport]. What musical, sport, play, and artistic activities, if any, were you participating in before becoming seriously involved in your main sport? Please list all of these activities, such as piano, dance, drawing, etc.

1. Any sport activity?

If YES: How old were you when you first got started? How long did you keep up the involvement? Please tell me about any periods when your involvement was stopped.

2. Any musical activity?

If YES: How old were you when you first got started? How long did you keep up the involvement? Please tell me about any periods when your involvement was stopped.

3. Any artistic activity such as dance or drawing?

If YES: How old were you when you first got started? How long did you keep up the involvement? Please tell me about any periods when your involvement was stopped.

4. Any organised games with rules supervised by self and peers (e.g. game of street basketball)?

If YES: How old were you when you first got started? How long did you keep up the involvement? Please tell me about any periods when your involvement was stopped.

5. Any other activity that consumed large amount of your time (e.g. watching sport on TV, reading about your sport)?

If YES: How old were you when you first got started? How long did you keep up the involvement? Please tell me about any periods when your involvement was stopped.

<Fill in Chart 2 - Early activities>

For each activity for which peers were involved please tell me who you played with, and rate their age compare to yours. Rate on average if the peers you played, practiced, or competed with were older, the same age, or younger than you.

<Fill in who played with and age of peers>

For each activity please tell me where you played / engaged in that activity.

<Fill in where played>

Could you discuss how you were first exposed / introduced to your main sport, and how the activities outlined in Chart 2 have affected your main sport involvement?

Chart 2 – Early activities

Activities	Age started	Age stopped	Who played with	Age of peers	Where played
<i>E.g. Piano lessons</i>	<i>8</i>	<i>12</i>	<i>On my own</i>	<i>n/a</i>	<i>Teachers house and at home</i>

Section 3 – Introduction to main sport and social influences

Now, I would like to ask you some general questions regarding your development as a [sport] player. This section of the interview will focus on your early development as a [sport] player and the impact that family, friends, and coaches had on your career.

A. Life span periodisation

I would like to take a moment and look at major periods in your development as a (sport) player. I would like you to think of your participation in sport from early on to now and regroup the years for which your participation and training remained consistent. I would like you to assess changes in your participation in terms of quality and quantity of involvement in sport. Please identify specific years at which your participation has changed. Do not force any categorisation; regroup years only if it makes sense to you. These periods will be used as a frame of reference for the rest of the interview. <Interviewer identify stage 1, 2, 3... with corresponding age>

Can you briefly describe why you have regrouped your involvement from age X to age X as stage 1? Can you briefly describe why you have regrouped your involvement from age X to age X as stage 2? <Repeat question for every stage identified>

B. Family influence

1. Do you know when your parents were born?
2. Are your parents of the same nationality as yourself?
3. Until what age did you live with your parents?
4. During the time that you lived with your parents, what were their occupations?
5. Can you tell me anything about your family or home environment, which has influenced your involvement in sport during the first stage of your participation (from age X to age X)?
6. Do you have brothers or sisters? If NO proceed with question 8. If YES are they older or younger and by how many years?
7. Until what age did you live with each of your siblings?
8. Growing up, was your family very physically active? Did your parents and siblings participate in any competitive sports themselves?
9. Was there anything else about the atmosphere in your family home such as special traditions or a direct parental example (modelling), which may have played a part in your exceptional achievement in [sport]?

C. Coach influence

1. Can you tell me about each of the coaches that you trained under for your main sport?
2. Can you describe the different types of practice (training) activities your coach emphasised during your first stage of development? <Repeat question for every stage identified>
3. Is there anything else about coach influence which may have played a part in your exceptional achievement in [sport]?

D. Other influences

1. Can you identify anyone else such as a **teacher** or a **mentor** that had an important influence on your development as a [sport] player? If YES proceed with the following questions for each person identified.
2. Can you describe your relationship with [person identified] in your first stage of development? Can you tell me anything about your relationship with [person identified] at that time that influenced your involvement in sport? [Repeat question for every stage identified]

This completes the first, general component of the interview procedure. Next we will discuss your sport specific development. Thank you for your time and patience so far.

Section 4 – Development of performance in main sport

In this next section of the interview I would like to focus more specifically on your development as a [sport] player. We will try to get a sense of your development in [sport] by assessing different milestones and factors that may have contributed to your exceptional achievement in [sport].

A. Main sport participation milestones

How old were you when you participated for the first time in the following activities on a regular basis?

- | | |
|--|-----------------|
| ___ years old for first regular involvement in <i>main sport</i> as a child or adolescent. | ___ do not know |
| ___ years old for first involvement in <u>supervised</u> activity (any kind) by adult in <i>main sport</i> | ___ do not know |
| ___ years old for first involvement in <u>supervised</u> training by an adult in <i>main sport</i> . | ___ do not know |
| ___ years old for first involvement in training not supervised by an adult in <i>main sport</i> . | ___ do not know |

B. Representative milestones

How old were you when you first participated in any of the following in a scheduled competition with recorded results?

Competition at the club or school level

- | | |
|--|------------------------|
| ___ years old for first participation on an organised team | ___ have never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the club level | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the club level | ___ never happened |
| | ___ do not know |

Competition at the region or zone level

- | | |
|--|------------------------|
| ___ years old for first participation on a regional level team | ___ have never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the regional level | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the regional level | ___ never happened |
| | ___ do not know |

Competition at the state level

- | | |
|---|------------------------|
| ___ years old for first participation on a state team | ___ have never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the state level in your main position / event | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the state level in your main position / event | ___ never happened |
| | ___ do not know |

Competition at the national level

- | | |
|--|---|
| ___ years old for first participation on the national team | ___ have never done it
___ do not know |
| ___ years old when recognised among top five players at the national level in your main position / event | ___ never happened
___ do not know |
| ___ years old when recognised as the best player at the national level in your main position / event | ___ never happened
___ do not know |

Competition at the international level (Olympics, World Cup)

- | | |
|---|---|
| ___ years old for first participation in a major international event | ___ have never done it
___ do not know |
| ___ years old when recognised among top five players in the world in your main position / event | ___ never happened
___ do not know |
| ___ years old when recognised as the best player in the world in your main position / event | ___ never happened
___ do not know |

C. Career milestones

- | | |
|---|--|
| ___ years old when <u>first</u> engaged in the regular training of a team | ___ never happened
___ do not know |
| ___ years old when <u>idea</u> for becoming an elite athlete first emerged | ___ never happened
___ do not know |
| ___ years old when <u>decision</u> was made to become an elite athlete | ___ never happened
___ do not know |
| ___ years old when all available leisure time began being spent on your athletic training | ___ never happened
___ do not know |
| ___ years old for first “off season” training camp | ___ have never participated
___ do not know |
| ___ years old when you first moved (relocated) to attend regular training in sport | ___ have never done it
___ do not know |
| ___ years old when you first established a close and extended relation with a coach | ___ never happened
___ do not know |

D. Sports specific milestones

- | | |
|---|-----------------|
| ___ years old when you first started playing (not in an organised league / competition) | ___ do not know |
| ___ years old when first played in an organised league / competition | ___ do not know |
| ___ years old when first began sport specific training regularly | ___ do not know |
| ___ years old when first began non-sport specific training (aerobic, strength, etc) regularly | ___ do not know |

E. Development of performance in main sport chart

<Interviewer produces Chart 3- Development of performance in main sport >

I would like to summarise the information on the development of your performance in your main sport. Some of it is related to the information that you gave earlier on your level of competition. Let's start with the first year of involvement. Let's proceed by column.

You were X years old when you first got involved in the sport. At what age do you feel your training changed and you began to specialise in your main sport? In this chart we will treat the years before you specialised as your first stage. What year was that? Next we will fill out the level(s) at which you competed.

<Fill in level >

For each year, can you tell me about any significant accomplishments you attained?

<Fill in accomplishments>

For each of the years listed in the chart can you provide the number of sessions per week, number of hours per week, and the number of months per year that you were involved in your main sport? This includes practices, games, and specific training activities for your main sport (organised training, games, self-initiated training, and individualised instruction).

<Fill in sessions per week, hours per week, and months per year>

For each of the years listed in the chart, can you identify what the main emphasis of your participation in your main sport was? What was the main reason for your participation?

<Fill in main emphasis for participation>

Have you ever sustained any injuries or illnesses that had an adverse affect on your involvement in your main sport? If so, please describe these injuries / illnesses. How were these injuries incurred? How did they affect your practice or competition activities?

<Fill in injury / illness>

Aside from the injuries / illnesses you just described, have you ever had any other significant periods of time away from your sport? If so, please describe this time away, and how this affected your participation in your main sport.

<Fill in time off>

Throughout your involvement in your main sport, have you ever had access to sport science or sport medicine support? If so, please tell me about the support you received and how that support influenced your performance.

<Fill in sport science / sport medicine>

F. Life span periodisation

I would like to take a moment and look at the chart we developed together. If possible I would like you to again regroup the years for which your training remained consistent and identify specific years at which your training has changed in terms of quality and quantity. Please do not force any categorisation; regroup years only if it makes sense to you. This will allow identification of major periods in your development as a (sport). These periods will be used as a frame of reference for the rest of the interview.

<Athlete categorises years into stages>

Chart 3 – Development of performance in main sport

Stage.	Year/ Season	Age	Level of representation	Accomplishments	Sessions per week	Hrs per week	Months per year	Main emphasis for participation	Injury / Illness	Time off	Sport Science / Sport Medicine
<i>E.g. 1</i>	<i>1</i>	<i>6</i>	<i>Club</i>	<i>Club Champion Level 1</i>	<i>2</i>	<i>4</i>	<i>10</i>	<i>Enjoyment</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Section 5 – Development of relevant practice activities in main sport

The following section relates to the types of practice activities you engaged in, the number of hours spent practicing per week, and the number of months per year you were training for each of these activities. This will be done for each of the stages you previously identified.

<Interviewer produces Chart 4 - Development of relevant practice activities in main sport>

<Interviewer completes the age and stage columns in accordance to information given in Chart 3 – Development of performance in main sport>

Please list all of the sport specific activities that you participated in during each of the developmental stages that you have previously identified. The activities to be listed should encompass both competitive season and off-season.


<Fill in activities>

Now that you have listed all of the activities you participated in at each stage, I would like you, if possible, to categorise these activities in accordance to the following list:

1. **Supervised group practice** - Any practice activities that were completed as part of a team / group, during which a coach was present. E.g. Team practice.
2. **Supervised individual practice** - Any practice activities that were completed one-on-one with a coach, but no other team mates. E.g. Private lessons.
3. **Unsupervised individual practice** - Any practice activities that were completed on your own, without direct coach supervision, that you undertook with the aim of performance improvement. E.g. Shooting baskets.
4. **Organised competition** - Any formal competitive activities or games in which you competed against other teams / athletes. E.g. Interclub tournament.
5. **Unsupervised play** - Any unstructured, informal, playful activities resembling your main sport that you engaged in either on your own or as part of a group, during which the emphasis was on enjoyment rather than performance improvement. E.g. Pick-up basketball.
6. **Indirect involvement** - Any passive activities relating to your main sport that you engaged in either on your own or as part of a group. E.g. Watching your sport on TV, reading books about your sport.

<Fill in category>

<If they have not talked about all of the categories then the following questions should be asked about the categories they did not mention. These should then be added to the chart>

 Is there any time that you participated in supervised group practice? If so, what were these activities?

Is there any time that you participated in supervised individual practice? If so, what were these activities?

Is there any time when you participated in unsupervised individual practice? If so, what were these activities?

Is there any time that you participated in organised competition? If so, what were these activities?

Is there any time that you participated in unsupervised play? If so, what were the activities?

Is there any time when you were indirectly involved in your sport? If so, what were these activities?

Next, please indicate how many sessions per week and hours per week you were participating in this particular activity.

<Fill in sessions per week and hours per week>

Please indicate the number of months per year that you engaged in each activity.

<Fill in months per year>

This completes the second component of the interview procedure. Thank you for your time and patience in filling out each of the charts.

Chart 4 – Development of relevant practice activities in main sport

[illegible]

Appendix E.

Study Phase Two Parent Interview Guide

Interview Procedures – Parent Interviews

Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire

Introduction

The purpose of this study is to develop a questionnaire that will help us to learn more about the developmental pathways of elite athletes. You have been invited to participate in this process because your child has been recognised as being an elite level performer within your sport. Our hope is to determine commonalities in the developmental histories and the practice conditions experienced by elite athletes, so that recommendations can be made relating to the optimal conditions conducive to the development of sport expertise. To do this we are conducting a series of questionnaires and interviews, some of which will be done in a chart format. Your assistance in completing this interview and other parts of the study is greatly appreciated.

Section 1 – Places of Residence

Let's get started, first I would like you to think about all the places you have lived, and fill in this "places of residence" chart with me.

<Interviewer produce Chart 1 – Places of residence>

Can you please list the location of all of the houses you have ever lived in with your child?

<Fill in suburb, state, country, and postal code>

During what years did you live at each of these houses?

<Fill in lived here from year and lived here until year>

Each time you moved house, can you remember why you moved?

<Fill in reason for relocation>

For each house you lived in, can you please tell me who else lived with you there?

<Fill in who else lived with you>

Chart 1 – Places of residence

Suburb / Town	State / Province	Country	Postal Code	Lived here from age	Lived here until age	Reason for relocation to this residence	Who else lived with you here?
<i>E.g. Bilgola Plateau</i>	<i>NSW</i>	<i>AUS</i>	<i>2107</i>	<i>Birth</i>	<i>15</i>	<i>Lived here from birth</i>	<i>Mum, dad, brother</i>

Section 2 - Early activities

Next, I would like to focus on the activities that your child was involved in when they were young. In this chart <Interviewer produce Chart 2 – Early activities> I would like to ask you to list all of the activities your child was involved in outside of mandatory school activities, for example music, dance, play and other domains of activity. I am also interested in their early sport involvement. Looking back over your child's entire life please tell me of any type of activity that they engaged in on a regular basis before they decided to specialise in [sport]. What musical, sport, play, and artistic activities, if any, was your child participating in before becoming seriously involved in their main sport? Please list all of these activities, such as piano, dance, drawing, etc.

6. Any sport activity?

If YES: How old was your child when they first got started? How long did they keep up the involvement? Please tell me about any periods when their involvement was stopped.

7. Any musical activity?

If YES: How old was your child when they first got started? How long did they keep up the involvement? Please tell me about any periods when their involvement was stopped.

8. Any artistic activity such as dance or drawing?

If YES: How old was your child when they first got started? How long did they keep up the involvement? Please tell me about any periods when their involvement was stopped.

9. Any organised games with rules supervised by self and peers (e.g. game of street basketball)?

If YES: How old was your child when they first got started? How long did they keep up the involvement? Please tell me about any periods when their involvement was stopped.

10. Any other activity that consumed large amount of your time (e.g. watching sport on TV, reading about your sport)?

If YES: How old was your child when they first got started? How long did they keep up the involvement? Please tell me about any periods when their involvement was stopped.

<Fill in Chart 2 - Early activities>

For each activity for which peers were involved please tell me who your child played with, and rate their peers' age compare to your child's. Rate on average if the peers they played, practiced, or competed with were older, the same age, or younger than your child.

<Fill in who played with and age of peers>

For each activity please tell me where your child played / engaged in that activity.

<Fill in where played>

Could you discuss how your child was first exposed / introduced to their main sport, and how the activities outlined in Chart 2 have affected their main sport involvement?

Chart 2 – Early activities

Activities	Age started	Age stopped	Who played with	Age of peers	Where played
<i>E.g. Piano lessons</i>	<i>8</i>	<i>12</i>	<i>On my own</i>	<i>n/a</i>	<i>Teachers house and at home</i>

Section 3 – Introduction to main sport and social influences

Now, I would like to ask you some general questions regarding your child's development as a [sport] player. This section of the interview will focus on their early development as a [sport] player and the impact that family, friends, and coaches had on their career.

A. Life span periodisation

I would like to take a moment and look at major periods in your child's development as a (sport) player. I would like you to think of their participation in sport from early on to now and regroup the years for which their participation and training remained consistent. I would like you to assess changes in your child's participation in terms of quality and quantity of involvement in sport. Please identify specific years at which your child's participation changed. Do not force any categorisation; regroup years only if it makes sense to you. These periods will be used as a frame of reference for the rest of the interview. <Interviewer identify stage 1, 2, 3... with corresponding age>

Can you briefly describe why you have regrouped your child's involvement from age X to age X as stage 1? Can you briefly describe why you have regrouped your child's involvement from age X to age X as stage 2? <Repeat question for every stage identified>

B. Family influence

10. In what years were you and your spouse born?
11. Of what nationality are you and your spouse?
12. Until what age did your child live with you?
13. During the time that your child lived with you, what were you and your spouse's occupations?
14. Can you tell me anything about your family or home environment, which may have influenced your child's involvement in sport during the first stage of their participation (from age X to age X)?
15. Do you have other children? If NO proceed with question 8. If YES are they older or younger and by how many years?
16. Until what age did each of your children live with you?
17. Growing up, was your family very physically active? Did you, your spouse, or your other children participate in any competitive sports yourselves?
18. Was there anything else about the atmosphere in your family home such as special traditions or a direct parental example (modelling), which may have played a part in your child's exceptional achievement in [sport]?

C. Coach influence

4. Can you tell me about each of the coaches that your child trained under for their main sport?
5. Are you able to describe the different types of practice (training) activities your child's coaches emphasised during their first stage of development? <Repeat question for every stage identified>
6. Is there anything else about coach influence which may have played a part in your child's exceptional achievement in [sport]?

D. Other influences

3. Can you identify anyone else such as a **teacher** or a **mentor** that had an important influence on your child's development as a [sport] player? If YES proceed with the following questions for each person identified.
4. Can you describe your child's relationship with [person identified] in their first stage of development? Can you tell me anything about their relationship with [person identified] at that time that influenced your child's involvement in sport? [Repeat question for every stage identified]

This completes the first, general component of the interview procedure. Next we will discuss your child's sport specific development. Thank you for your time and patience so far.

Section 4 – Development of performance in main sport

In this next section of the interview I would like to focus more specifically on your child's development as a [sport] player. We will try to get a sense of your child's development in [sport] by assessing different milestones and factors that may have contributed to their exceptional achievement in [sport].

A. Main sport participation milestones

How old was your child when they participated for the first time in the following activities on a regular basis?

- | | |
|--|-----------------|
| ___ years old for first regular involvement in <i>main sport</i> as a child or adolescent. | ___ do not know |
| ___ years old for first involvement in <u>supervised</u> activity (any kind) by adult in <i>main sport</i> | ___ do not know |
| ___ years old for first involvement in <u>supervised</u> training by an adult in <i>main sport</i> . | ___ do not know |
| ___ years old for first involvement in training not supervised by an adult in <i>main sport</i> . | ___ do not know |

B. Representative milestones

How old was your child when they first participated in any of the following in a scheduled competition with recorded results?

Competition at the club or school level

- | | |
|--|-----------------------|
| ___ years old for first participation on an organised team | ___ has never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the club level | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the club level | ___ never happened |
| | ___ do not know |

Competition at the region or zone level

- | | |
|--|-----------------------|
| ___ years old for first participation on a regional level team | ___ has never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the regional level | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the regional level | ___ never happened |
| | ___ do not know |

Competition at the state level

- | | |
|--|-----------------------|
| ___ years old for first participation on a state team | ___ has never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the state level in their main position / event | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the state level in their main position / event | ___ never happened |
| | ___ do not know |

Competition at the national level

- | | |
|---|--|
| ___ years old for first participation on the national team | ___ has never done it
___ do not know |
| ___ years old when recognised among top five players at the national level in their main position / event | ___ never happened
___ do not know |
| ___ years old when recognised as the best player at the national level in their main position / event | ___ never happened
___ do not know |

Competition at the international level (Olympics, World Cup)

- | | |
|--|--|
| ___ years old for first participation in a major international event | ___ has never done it
___ do not know |
| ___ years old when recognised among top five players in the world in their main position / event | ___ never happened
___ do not know |
| ___ years old when recognised as the best player in the world in their main position / event | ___ never happened
___ do not know |

C. Career milestones

- | | |
|---|---|
| ___ years old when <u>first</u> engaged in the regular training of a team | ___ never happened
___ do not know |
| ___ years old when <u>idea</u> for becoming an elite athlete first emerged | ___ never happened
___ do not know |
| ___ years old when <u>decision</u> was made to become an elite athlete | ___ never happened
___ do not know |
| ___ years old when all available leisure time began being spent on their athletic training | ___ never happened
___ do not know |
| ___ years old for first “off season” training camp | ___ has never participated
___ do not know |
| ___ years old when you first moved (relocated) for your child to attend regular training in sport | ___ has never done it
___ do not know |
| ___ years old when your child first established a close and extended relation with a coach | ___ never happened
___ do not know |

D. Sports specific milestones

- | | |
|--|-----------------|
| ___ years old when your child first started playing (not in an organised league / competition) | ___ do not know |
| ___ years old when first played in an organised league / competition | ___ do not know |
| ___ years old when first began sport specific training regularly | ___ do not know |
| ___ years old when first began non-sport specific training (aerobic, strength, etc) regularly | ___ do not know |

E. Development of performance in main sport chart

<Interviewer produces Chart 3- Development of performance in main sport >

I would like to summarise the information on the development of your child's performance in their main sport. Some of it is related to the information that you gave earlier on their level of competition. Let's start with the first year of involvement. Let's proceed by column.

Your child was X years old when they first got involved in the sport. At what age do you feel your child's training changed and they began to specialise in their main sport? In this chart we will treat the years before your child specialised as their first stage. What year was that? Next we will fill out the level(s) at which they competed.

<Fill in level >

For each year, can you tell me about any significant accomplishments your child attained?

<Fill in accomplishments>

For each of the years listed in the chart can you provide the number of sessions per week, number of hours per week, and the number of months per year that your child was involved in their main sport? This includes practices, games, and specific training activities for their main sport (organised training, games, self-initiated training, and individualised instruction).

<Fill in sessions per week, hours per week, and months per year>

For each of the years listed in the chart, can you identify what the main emphasis of your child's participation in their main sport was? What was the main reason for your child's participation?

<Fill in main emphasis for participation>

Has your child ever sustained any injuries or illnesses that had an adverse affect on their involvement in their main sport? If so, please describe these injuries / illnesses. How were these injuries incurred? How did they affect your child's practice or competition activities?

<Fill in injury / illness>

Has your child ever had a significant time away from their sport for reasons other than injury or illness? If so, please describe this time away, and how this affected their participation in their main sport.

<Fill in time off>

Throughout your child's involvement in their main sport, have they ever had access to sport science or sport medicine support? If so, are you able to please tell me about the support they received and how that support influenced their performance?

<Fill in sport science / sport medicine>

F. Life span periodisation

I would like to take a moment and look at the chart we developed together. If possible I would like you to again regroup the years for which your child's training remained consistent and identify specific years at which their training changed in terms of quality and quantity. Please do not force any categorisation; regroup years only if it makes sense to you. This will allow identification of major periods in your child's development as a (sport). These periods will be used as a frame of reference for the rest of the interview.

<Parent categorises years into stages>

Chart 3 – Development of performance in main sport

Stage.	Year/ Season	Age	Level of representation	Accomplishments	Sessions per week	Hrs per week	Months per year	Main emphasis for participation	Injury / Illness	Time off	Sport Science / Sport Medicine
<i>E.g. 1</i>	<i>1</i>	<i>6</i>	<i>Club</i>	<i>Club Champion Level 1</i>	<i>2</i>	<i>4</i>	<i>10</i>	<i>Enjoyment</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Section 5 – Development of relevant practice activities in main sport

The following section relates to the types of practice activities your child engaged in, the number of hours spent practicing per week, and the number of months per year they were training for **each** of these activities. This will be done for **each** of the stages you previously identified.

<Interviewer produces Chart 4 - Development of relevant practice activities in main sport>

<Interviewer completes the age and stage columns in accordance to information given in Chart 3 – Development of performance in main sport>

Please list all of the sport specific activities that your child participated in during each of the developmental stages that you have previously identified. The activities to be listed should encompass both competitive season and off-season.


<Fill in activities>

Now that you have listed all of the activities your child participated in at each stage, I would like you, if possible, to categorise these activities in accordance to the following list:

1. **Supervised group practice** - Any practice activities that were completed as part of a team / group, during which a coach was present. E.g. Team practice.
2. **Supervised individual practice** - Any practice activities that were completed one-on-one with a coach, but no other team mates. E.g. Private lessons.
3. **Unsupervised individual practice** - Any practice activities that your child completed on their own, without direct coach supervision, that they undertook with the aim of performance improvement. E.g. Shooting baskets.
4. **Organised competition** - Any formal competitive activities or games in which your child competed against other teams / athletes. E.g. Interclub tournament.
5. **Unsupervised play** - Any unstructured, informal, playful activities resembling your child's main sport that they engaged in either on their own or as part of a group, during which the emphasis was on enjoyment rather than performance improvement. E.g. Pick-up basketball.
6. **Indirect involvement** - Any passive activities relating to your child's main sport that they engaged in either on their own or as part of a group. E.g. Watching their sport on TV, reading books about their sport.

<Fill in category>

<If they have not talked about all of the categories then the following questions should be asked about the categories they did not mention. These should then be added to the chart>

 Is there any time that your child participated in supervised group practice? If so, what were these activities?

Is there any time that your child participated in supervised individual practice? If so, what were these activities?

Is there any time when your child participated in unsupervised individual practice? If so, what were these activities?

Is there any time that your child participated in organised competition? If so, what were these activities?

Is there any time that your child participated in unsupervised play? If so, what were the activities?

Is there any time when your child was indirectly involved in their sport? If so, what were these activities?

Next, please indicate how many sessions per week and hours per week your child participated in this particular activity.

<Fill in sessions per week and hours per week>

Please indicate the number of months per year that your child engaged in each activity.

<Fill in months per year>

This completes the second component of the interview procedure. Thank you for your time and patience in filling out each of the charts.

Chart 4 – Development of relevant practice activities in main sport

[illegible]

Appendix F.

Study Phase Two Coach Interview Guide

Interview Procedures – Coach Interviews

Designing the DHAQ: Construction and Validation of the Developmental History of Athletes Questionnaire

Introduction

The purpose of this study is to develop a questionnaire that will help us to learn more about the developmental pathways of elite athletes. You have been invited to participate in this process because one of your former / current athletes has been recognised as being an elite level performer within your sport. Our hope is to determine commonalties in the developmental histories and the practice conditions experienced by elite athletes, so that recommendations can be made relating to the optimal conditions conducive to the development of sport expertise. To do this we are conducting a series of questionnaires and interviews, some of which will be done in a chart format. Your assistance in completing this interview and other parts of the study is greatly appreciated.

Section 1 – Development of performance in main sport

In this section of the interview I would like to focus specifically on your athlete's development as a [sport] player. We will try to get a sense of your athlete's development in [sport] by assessing different milestones and factors that may have contributed to their exceptional achievement in [sport]. Please answer as many of the following questions that you can.

A. Representative milestones

Are you able to tell me how old your athlete was when they first participated in any of the following in a scheduled competition with recorded results?

Competition at the club or school level

- | | |
|--|-----------------------|
| ___ years old for first participation on an organised team | ___ has never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the club level | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the club level | ___ never happened |
| | ___ do not know |

Competition at the region or zone level

- | | |
|--|-----------------------|
| ___ years old for first participation on a regional level team | ___ has never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the regional level | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the regional level | ___ never happened |
| | ___ do not know |

Competition at the state level

- | | |
|--|-----------------------|
| ___ years old for first participation on a state team | ___ has never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the state level in their main position / event | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the state level in their main position / event | ___ never happened |
| | ___ do not know |

Competition at the national level

- | | |
|---|-----------------------|
| ___ years old for first participation on the national team | ___ has never done it |
| | ___ do not know |
| ___ years old when recognised among top five players at the national level in their main position / event | ___ never happened |
| | ___ do not know |
| ___ years old when recognised as the best player at the national level in their main position / event | ___ never happened |
| | ___ do not know |

Competition at the international level (Olympics, World Cup)

- | | |
|--|--|
| ___ years old for first participation in a major international event | ___ has never done it
___ do not know |
| ___ years old when recognised among top five players in the world in their main position / event | ___ never happened
___ do not know |
| ___ years old when recognised as the best player in the world in their main position / event | ___ never happened
___ do not know |

B. Career milestones

- | | |
|--|--|
| ___ years old when <u>first</u> engaged in the regular training of a team | ___ never happened
___ do not know |
| ___ years old when <u>idea</u> for becoming an elite athlete first emerged | ___ never happened
___ do not know |
| ___ years old when <u>decision</u> was made to become an elite athlete | ___ never happened
___ do not know |
| ___ years old when all available leisure time began being spent on their athletic training | ___ never happened
___ do not know |
| ___ years old for first “off season” training camp | ___ never happened
___ do not know |
| ___ years old when your athlete first moved (relocated) to attend regular training in sport | ___ has never done it
___ do not know |
| ___ years old when your athlete first established a close and extended relation with a coach | ___ never happened
___ do not know |

C. Sports specific milestones

- | | |
|--|-----------------|
| ___ years old when your athlete first started playing (not in an organised league / competition) | ___ do not know |
| ___ years old when first played in an organised league / competition | ___ do not know |
| ___ years old when first began sport specific training regularly | ___ do not know |
| ___ years old when first began non-sport specific training (aerobic, strength, etc) regularly | ___ do not know |

D. Development of performance in main sport chart

<Interviewer produces Chart 1- Development of performance in main sport >

I would like to summarise the information on the development of your athlete’s performance in their main sport during the time that they trained with you. Let’s start with the first year of your involvement with [name]. Let’s proceed by column.

Can you tell me the ages of your athlete during the time that you coached them?

Next we will fill out the level(s) at which they competed.

<Fill in level >

For each year, can you tell me about any significant accomplishments your athlete attained?

<Fill in accomplishments>

For each of the years listed in the chart can you provide the number of sessions per week, number of hours per week, and the number of months per year that your athlete was involved in their main sport? This includes practices, games, and specific training activities for their main sport (organised training, games, self-initiated training, and individualised instruction).

<Fill in sessions per week, hours per week, and months per year>

For each of the years listed in the chart, can you identify what the main emphasis of your athlete's participation in their main sport was? What was the main reason for your athlete's participation?

<Fill in main emphasis for participation>

For each of the years listed in the chart, did your athlete ever sustain any injuries or illnesses that had an adverse affect on their involvement in their main sport? If so, please describe these injuries / illnesses. How were these injuries incurred? How did they affect your athlete's practice or competition activities?

<Fill in injury / illness>

For each of the years listed in the chart, did your athlete ever have a significant time away from their sport for reasons other than illness or injury? If so, please describe this time away, and how this affected their participation in their main sport.

<Fill in time off>

Throughout your athlete's involvement in their main sport with you, did they ever have access to sport science or sport medicine support? If so, are you able to please tell me about the support they received and how that support influenced their performance?

<Fill in sport science / sport medicine>

D. Life span periodisation

I would like to take a moment and look at the chart we developed together. If possible I would like you to regroup the years for which your athlete's training remained consistent and identify specific years at which their training changed in terms of quality and quantity. Please do not force any categorisation; regroup years only if it makes sense to you. This will allow identification of major periods in your athlete's development as a (sport). These periods will be used as a frame of reference for the rest of the interview.

<Coach categorises years into stages>