Technical Report:
LiFE*sports* Survey Tools

The LiFE*sports* Initiative
College of Social Work
The Ohio State University

LiFE*sports* Survey Tools
Transfer of Learning Scale

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Transfer of Learning Scale

I. Definition of Construct

Transfer of learning is defined as the application of past learning and skills in similar and new situations (Haskell, 2001; Pierce et al., 2017). Assessment of transfer of learning is important as life skills transferred from sport to other contexts have been associated with academic success (Bradley & Conway, 2016; Newman, 2020; Pierce et al., 2022), pro-social community engagement (Newman, 2020; Scheadler et al., 2024), positive interpersonal relationships (Newman, 2020; Scheadler et al., 2024), and long-term outcomes (Scheadler et al., 2024; Scheadler et al., 2025).

II. Relevance for Practice

Research has demonstrated that the assessment of transfer of learning is crucial to understand the life skill development, application, and transfer among youth as well as examining the outcomes associated with youth development programs and interventions (Anderson-Butcher et al., 2012; Anderson-Butcher et al., 2014; Anderson-Butcher et al., 2021; Newman & Anderson-Butcher, 2021; Pierce et al., 2017; Pierce et al., 2022).

III. Scale Description and Instructions

A. *Items*

1. The skills I learn in sport are useful to me in other parts of my life.
2. I take many of the skills I learn in sport and use them "outside of sport."
3. I learn skills in sport that I use I other places.

B. *Response Options*

1.= Not at all true
2.= A little true
3.= Somewhat true
4.= Pretty true
5.= Really true

C. *Instructions for Respondents*

Please read each statement and fill in the circle that best shows your answer.

D. *Instructions for Scale Administers*

Once each student has a survey, explain that the purpose of the survey is to learn more about their transfer of learning to settings outside of sport. They should mark one answer per statement, selecting the choice that best reflects how they feel.

IV. Scoring Procedures

An average of the response scores from the three (3) items should be calculated and used as an indicator of transfer of learning, with higher scores reflecting greater levels of transfer of learning to other settings.

V. Psychometric Properties of the Scale

The three Transfer of Learning Scale items load strongly and evenly on a single factor (standardized loadings .78–.82) and show good internal consistency ($\alpha = .84$). The scale is invariant across gender and age group through the scalar level, so group means can be compared directly. Boys report more transfer of sport skills than girls, and campers aged 8–10 report more than those aged 11 and older; both differences are small. Transfer correlates .40 with self-control and .57–.59 with effort, teamwork and social responsibility.

Transfer was measured only on the Post-Camp survey. The analytic sample comprised 963 campers aged 8–16 years (M = 10.82, SD = 1.63) with complete responses on all three Transfer items. For campers with complete Transfer responses in more than one year, one Post-Camp survey was used (2023: n = 300; 2024: n = 222; 2025: n = 203; 2026: n = 238). Self-control, effort, teamwork and social responsibility come from the same survey administration. Campers younger than 8 were excluded. Two campers who did not report as male or female are included in overall analyses but not gender analyses.

Table 1

Analytic Sample by Gender and Age Group

Group	Age 8–10	Age 11+	Total
Female	184	205	389
Male	244	328	572
Other / not reported	0	2	2
Total	428	535	963

Confirmatory Factor Analysis

A one-factor model was estimated in lavaan (R) with robust maximum likelihood (MLR). All three items loaded strongly (standardized $\lambda = .78–.82$, all $p < .001$), and the factor explained 61–67% of the variance in each item. McDonald's $\omega = .84$. Treating items as ordinal (WLSMV) gave the same pattern with slightly higher loadings (.83–.86).

With three indicators, a one-factor model is just-identified (df = 0): it reproduces the data perfectly by definition, so global fit indices (χ^2, CFI, RMSEA) cannot test it. Evidence for the structure therefore rests on the size and evenness of the loadings, and on the multigroup invariance models below, which do have degrees of freedom.

Table 2

Standardized Factor Loadings

Item	λ (MLR)	95% CI	R^2	λ (WLSMV)
TF1 Useful in other parts of life	.78	.73–.83	.61	.83
TF2 Use skills outside of sport	.82	.77–.87	.67	.86
TF3 Use skills in other places	.80	.75–.85	.64	.85

Note. N = 963. All loadings $p < .001$. Inter-item correlations were .62–.65.

Measurement Invariance by Gender and Age Group

Multigroup CFAs tested configural, metric (equal loadings), scalar (equal intercepts) and strict (equal residual variances) invariance. Each model was compared with the preceding one using Satorra–Bentler scaled χ^2 difference tests and changes in robust CFI and RMSEA, with decisions following Chen's (2007) criteria (ΔCFI $\geq -.010$, ΔRMSEA $\leq .015$). Because the configural models are just-identified, their fit is perfect by definition.

Table 3
Measurement Invariance Across Gender and Age Group

Comparison / model	χ^2 (df)	CFI	TLI	RMSEA	SRMR	$\Delta\chi^2$ (df)	p	ΔCFI	ΔRMSEA	Decision
Gender: configural	0.00 (0)	1.000	—	.000	.000	—	—	—	—	Baseline
Gender: metric	1.33 (2)	1.000	1.000	.000	.013	1.33 (2)	.51	.000	.000	Supported
Gender: scalar	2.38 (4)	1.000	1.000	.000	.015	1.01 (2)	.60	.000	.000	Supported
Gender: strict	2.46 (7)	1.000	1.000	.000	.018	0.54 (3)	.91	.000	.000	Supported
Age: configural	0.00 (0)	1.000	—	.000	.000	—	—	—	—	Baseline
Age: metric	3.14 (2)	.999	.996	.041	.022	3.14 (2)	.21	−.001	+.041	Supported
Age: scalar	4.42 (4)	1.000	.999	.016	.022	0.85 (2)	.65	+.001	−.025	Supported
Age: strict	17.03 (7)	.986	.988	.069	.036	10.33 (3)	.016	−.014	+.053	Not supported

Note. Gender n = 961 (389 female, 572 male); age group n = 963 (428 aged 8–10, 535 aged 11+). MLR estimation; robust CFI, TLI and RMSEA. TLI values above 1 are reported as 1.000. Each model is compared with the preceding model.

Gender. Invariance held at every level, including strict. The scale measures transfer in the same way for boys and girls. In the scalar model, boys' latent mean was 0.25 SD higher than girls' ($z = 3.38$, $p < .001$).

Age group. Metric and scalar invariance held. The ΔRMSEA of +.041 at the metric step exceeds the usual .015 guideline, but RMSEA is unstable with very few degrees of freedom (df = 2; Kenny et al., 2015), and both $\Delta\chi^2$ and ΔCFI support invariance. Strict invariance was not supported: younger campers' responses carry more item-specific error (standardized loadings .71–.75 for ages 8–10 vs. .80–.86 for ages 11+). This does not affect comparisons of means. In the scalar model, campers aged 11+ were 0.35 SD lower than those aged 8–10 ($z = -4.97$, $p < .001$).

Internal Consistency

Cronbach's α was .84 overall and acceptable in every group. It was lowest for campers aged 8–10 (.78) and highest for those aged 11+ (.87), consistent with the age difference in item precision noted above. Removing any single item would lower α in every group.

Table 4

Cronbach's Alpha Overall and by Group

Group	n	α	95% CI	Mean inter-item r	Item–total r (TF1 / TF2 / TF3)
Overall	963	.84	.82–.86	.64	.69 / .71 / .70
Male	572	.83	.81–.85	.62	.68 / .71 / .68
Female	389	.85	.82–.87	.65	.70 / .72 / .72
Age 8–10	428	.78	.74–.81	.54	.63 / .63 / .60
Age 11+	535	.87	.85–.89	.69	.73 / .77 / .76

Note. Item–total correlations are corrected (item removed from total).

Descriptive Statistics

Campers reported a high level of transfer (M = 3.87 on a 1–5 scale). All items were negatively skewed, and 22% of campers gave the top rating on all three items, indicating some ceiling effect.

Table 5

Descriptive Statistics for Items and Scale Scores

Variable	n	M	SD	Mdn	Skew	Kurtosis	% at 5
TF1	963	3.90	1.16	4	−0.92	0.02	39.1
TF2	963	3.81	1.19	4	−0.84	−0.14	35.2
TF3	963	3.90	1.14	4	−0.88	−0.05	38.9
Transfer scale	963	3.87	1.01	4.00	−0.81	0.04	22.4
Male	572	3.97	0.98	4.00	−0.96	0.47	24.5
Female	389	3.74	1.05	4.00	−0.62	−0.36	19.5
Age 8–10	428	4.05	0.93	4.33	−1.00	0.51	26.4
Age 11+	535	3.73	1.05	4.00	−0.65	−0.23	19.3
Self-control (7 items)	931	3.54	0.95	3.57	−0.39	−0.32	8.1
Effort (7 items)	941	3.91	0.88	4.00	−0.81	0.50	14.3
Teamwork (8 items)	933	3.76	0.84	3.88	−0.62	0.32	8.8
Social responsibility (7 items)	929	3.79	0.88	3.86	−0.68	0.35	11.9

Note. % at 5 = percentage with the maximum possible score. The four other scales come from the same Post-Camp survey and were scored only for campers who answered every item.

Group Differences

Boys reported more transfer than girls ($d = 0.23$, $p < .001$), and campers aged 8–10 reported more than those aged 11+ ($d = 0.32$, $p < .001$). The same pattern appeared on every item.

Table 6

Differences by Gender and Age Group

Variable	Male M (SD)	Female M (SD)	d	p	8–10 M (SD)	11+ M (SD)	d	p
TF1	4.01 (1.11)	3.75 (1.20)	0.23	< .001	4.07 (1.13)	3.77 (1.16)	0.26	< .001
TF2	3.89 (1.17)	3.68 (1.20)	0.18	.007	3.98 (1.16)	3.67 (1.19)	0.26	< .001
TF3	4.00 (1.10)	3.78 (1.19)	0.19	.004	4.10 (1.05)	3.75 (1.19)	0.31	< .001
Scale	3.97 (0.98)	3.74 (1.05)	0.23	< .001	4.05 (0.93)	3.73 (1.05)	0.32	< .001

Note. Welch t-tests with Cohen's d. Positive d indicates higher scores for boys or for campers aged 8–10. 95% CI for d on the scale score: gender [0.10, 0.36]; age [0.19, 0.45]. Mann–Whitney tests gave the same conclusions (all p < .01).

A 2 (gender) × 2 (age group) ANOVA on the scale score showed significant effects of gender, $F(1, 957) = 12.38$, $p < .001$, and age group, $F(1, 957) = 25.44$, $p < .001$, with no interaction, $F(1, 957) = 1.62$, $p = .20$. Cell means were 4.11 for boys aged 8–10, 3.96 for girls aged 8–10, 3.86 for boys aged 11+, and 3.54 for girls aged 11+.

Because scalar invariance holds, these observed differences match the latent results (gender: 0.25 SD; age: 0.35 SD) and reflect real differences in reported transfer rather than differences in how the items function.

Correlations With Other Scales

Transfer correlated moderately to strongly with social responsibility, teamwork and effort, and moderately with self-control (all p < .001). All five scales come from the same Post-Camp survey.

Table 7

Pearson Correlations Among Post-Camp Scales

Scale	1	2	3	4	5	α
1. Transfer	—					.84
2. Self-control	.40	—				.89
3. Effort	.57	.59	—			.90
4. Teamwork	.58	.60	.68	—		.88
5. Social responsibility	.59	.50	.64	.69	—	.87

Note. Pairwise deletion, n = 906–963 per pair. All correlations p < .001.

Table 8
Correlations of Transfer with Other Scales by Group

Transfer with	Overall [95% CI]	Male	Female	Age 8–10	Age 11+
Self-control	.40 [.35, .46]	.35	.46	.33	.46
Effort	.57 [.52, .61]	.56	.57	.50	.59
Teamwork	.58 [.53, .62]	.57	.59	.49	.63
Social responsibility	.59 [.54, .63]	.58	.62	.49	.63

Note. All correlations $p < .001$. Differences between group correlations were not formally tested.

Correlations were somewhat stronger for campers aged 11+ than for those aged 8–10, consistent with the younger group's lower reliability on the Transfer scale ($\alpha = .78$ vs. .87).

VI. Summary

The results of the psychometric testing indicate support for the Transfer of Learning Scale to measure transfer of learning for practice and research youth development initiatives.

VII. Recommended Citation of Scale

When using the Transfer of Learning Scale for program evaluation or research purposes, please use the following citation:

Anderson-Butcher, D., Wade-Mdivanian, R., Riley, A., Amorose, A., Iachini, A., & Davis, J. (2012). *Transfer of learning scale*. LiFE*sports* Initiative, Community & Youth Collaborative Institute, The Ohio State University, Columbus, OH.

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