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Using research-based evaluation to inform changes in the development of undergraduate sports science education in Ethiopia

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ABSTRACT

In this article we offer practical directions and guidance for a functional researcher on how to use research-based evaluation to inform changes in the development of undergraduate sports science education. For this, we introduce a research-based evaluation framework based on evaluation theory and tailored that to the realities of Ethiopian undergraduate sports science education. The framework uses both cross-sectional and longitudinal designs. A case study of the application of the framework shows that it has several benefits to help universities generate valuable institutional evidence to inform changes. The paper concludes with a brief note about implications for research and practice.

1. Introduction

1.1. Background

With the advent of quality assurance system, undergraduate education has become the focus of considerable attention in evaluating quality in higher education around the globe (Ewell, 2010). Whereas most universities worldwide conduct some form of evaluation work on their undergraduate programs, the institutional evidence basis for that work is limited and less used. In fact, a number of higher education researchers have extensively been working on the issues surrounding evaluation, yet there is a large variation in terms of the research methods and approaches utilized. In this respect, it is argued that research in this area has been more influenced by personal and methodological interests of scholars rather than a conceptually-orientated research agenda (Kuh, 2009; Melrose, 1998; Tam, 2007). The other problem is the difference in areas of focus among researchers (Pascarella, 2001). While the various works of literature are revealing, in particular, aspects of the undergraduate education program, systematic evidence informing holistic impacts on students' success is not yet available (Harvey & Williams, 2010; Tadesse, Manathunga, & Gillies, 2012).

Research shows that quality assurance has had a remarkably small impact on the day- to-day operation of departments and colleges (Stensaker, 2008). The very reason contributing to this small impact is the focus of quality assurance itself (Taousanidis & Antoniadou, 2010). While numerous higher education institutions have established a quality assurance

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scheme and quality initiatives of various sorts, nearly all of them have focused on non-academic activities (Tadesse, 2014b). Also, less is known within the framework of quality assurance in relation to opportunities for growth and development, as well as, challenges that the program implementers could face over the years (Clemmer, 2012).

1.2. Statement of the problem

Over the last two decades or so, the Ethiopian government, moving from a traditional system that privileged elites has attempted to make higher education more inclusive, reaching out to the broad strata of society (Goastellec, 2008). In fact, there has been a great leap in expansion having 2 public universities a couple of decades ago, now reaching 36 public universities that offer general education across several disciplines. Correspondingly, the system has endorsed a rapid, massive increase in students' numbers, now accommodating 593,571 students (Ministry of Education, 2015).

Also, various forms of centrally initiated education reform and innovations have been proliferating (Federal Democratic Republic of Ethiopia, 2010). For example, it is a recent experience to engage in curriculum harmonization through a compulsory adoption of a national curriculum framework and organizing course offerings through a modular approach (Higher Education Strategy Center, 2012). Also, using continuous assessment and criteria-referenced grading have become apparent.

The difficulty of evaluating undergraduate program successfully and the complexity of the components used in the evaluation process are now widely acknowledged (Harvey, 2008; Ross, Cen, & Zhou, 2011). Also, evaluative attempts in the Ethiopian higher education context have also been problematic; particularly in recent years as quality assurance has come to the primary concern of higher education institutions disseminated by centralized government agencies (Tadesse, 2014a). Moreover, methodological issues surrounding the evaluation tasks are apparent (Tadesse, 2014b; Tadesse & Gillies, 2015; Zerihun, Beishuizen, & Van Os, 2012).

Therefore, useful strategies and systematic evaluation approaches are becoming increasingly important to inform future decisions in undergraduate education. In this article, we argue for evidence-based practice in evaluating undergraduate sports science education through introducing a “research-based evaluation framework”. We describe the distinctive feature of each component of the evaluation framework and its potential benefits. We back up this with a case study report on the application of the framework and present a summary of the major findings of the case, and the implications of the framework for research and practice in undergraduate sports science education. The case study was conducted specifically to answer the following research questions.

1. In what context does the undergraduate sports science education operate in Ethiopia?
2. What are the perceived realities and challenges alumni's faced during their experiences of attending undergraduate sports science education in Ethiopia?
3. Is there a significant difference in academic achievement of undergraduate sports science students in Ethiopia across gender and university years?
4. Which demographic variables and university experiences relate with academic achievement of undergraduate sports science students in Ethiopia?

In the process of presenting evidence to address the above stated research questions, we also describe how the researchers collected the data and the various methods of analysis used to examine realities and challenges of implementing the undergraduate sports science program, and a range of group differences, and relationships among variables. Also, we provide a summary of the findings to synthesize evidence pertaining to the contributions of different demographic variables and university experiences on the academic achievement of undergraduate sports science students. In so doing, we provide directions and guidance to the functional researcher on how to use research-based evaluation framework to inform changes in the development of sports science education in Ethiopia.

1.3. Research-based evaluation framework in sports science education

The distinctive features of research-based evaluation that differentiate it from other common research approaches or methods is that this evaluation occupies the implementation process and learning outcomes as central concerns (Harvey, 2008; Tam, 2007), thereby embodies significant aspects of the program to promote quality (Tadesse, 2014b). Moreover, generating data across a range of primary and secondary sources makes the findings particularly useful resources for the institutions providing undergraduate program both locally and internationally. Thus, universities have the opportunity to understand the nature and functions of the undergraduate sports science education based on multiple stakeholders’ perspectives, thereby developing a broader understanding of the vast variety of relevant issues surrounding the sports science education. This could serve as the foundation for quality improvement in the undergraduate sports science education.

Table 1
The demographic characteristics of sports science undergraduates.

Variable	*N*	Mean	SD[a]	Min	Max
Gender	365	Freq. Perc.			
Male		251 (69%)			
Female		114 (31%)			
Age	277	20.03	1.91	17	33
Region	279	Freq. Perc.			
Tigray		60 (21%)			
Amhara		70 (25%)			
Oromiya		118 (42%)			
Benshangul		2 (1%)			
SNNPR		31 (11%)			
Preparatory School Completion Result	274	300.69	75.27	168	480
Male		300			
Female		301			

[a] Standard deviation

2. Research design and methods

2.1. Cross-sectional and longitudinal survey designs

This research-based evaluation employs both cross-sectional and longitudinal research designs, at the same time to explore issues of a sports science education. While the cross-sectional survey is applied to examine the prevailing realities at each year, the longitudinal survey design is applied to investigate the possible changes that happened within undergraduate sports science education over a period of 7 years' time from 2007 to 2014.

The type of longitudinal research applied in this evaluation research is called a trend study (Babbie, 2009). A trend study is a longitudinal survey design that involves identifying a population and examining changes within that population over time. Applied to an undergraduate sports science education, this type of study focused on undergraduates of sports science (a population) and studies the trends of their demographics, program implementation and academic achievement over a period of seven years since 2007.

2.2. Participants

In the case study, the study participants involved all undergraduate students populations enrolled in a Sports Science Department at a university from 2007 to 2011 ($N=363$) and 10 selected alumni (1 female and 1 male from each year graduates) identified through a snowball sampling technique. Table 1 presents the study participants demographic information.

As shown in Table 1, the student population is male dominated accounting for about two-third of the entire population. Also, there are about five regions from where the sports science students came from. The largest proportion of the students (42%) came from Oromiya region and another 25% and 21% from Amhara and Tigray, respectively. The students' average Preparatory School Completion Result during entry is 301, and this result is comparably similar across gender.

2.3. Data collection tools and procedures

To generate concrete evidence that guides preliminary recommendations, the researchers collected the necessary evidence using document analysis and in-depth interviews. The researchers examined the available documents of sports science curriculum to understand the nature and functions of the curriculum, and its teaching and assessment strategies. In addition to this, the student documents found in the registrar office of the studied university were critically analyzed using a structured checklist. Also, alumni interview was prepared to collect data from the graduates concerning their views and comments about their experiences during the university years and what they had achieved as a result of their involvement in the program and its effects more generally.

2.4. Data analysis

This article entails results of both quantitative and qualitative data sets on the undergraduate sports science education. In the quantitative data set, we used descriptive statistics to present basic information, tests of between-group differences (t test & analysis of variance) to measure the average score differences between groups; correlation analysis to determine the degree or pattern of association for two (or more) variables; and multiple regression analyses to examine the degree of influence explained in a dependent variable by all independent variables.

Also, the qualitative data obtained from each interview was recorded via an inbuilt voice recorder and further transcribed

verbatim. Then, the results from the different interviews were condensed as per the theme and sub-theme. Similarly, the researchers' content analyzed and summarized manually the data from the document review. Students' views and comments on the undergraduate sports sciences education and its effects were systematically analyzed from the comparative perspective to see patterns of similarities and differences. Finally, study findings from each data collection method were summarized in the major thematic areas.

3. A comprehensive summary of the major findings of the case study

3.1. The undergraduate sports science education in Ethiopia

The undergraduate sports science education has three major components, consisting of general courses modules, supportive courses modules and core courses modules with the largest share of the components belonging to the core courses modules. The core course module accounted for the 75 percent or three-fourth of the entire curriculum. The other general courses modules and supportive courses modules together accounted for the rest of the twenty-five percent or quarter of the entire curriculum. In terms of module weight, a quarter of the modules consisted of 5 credit points and the other quarter consisted of 16–28 credit points. The other half or fifty percent of the modules consisted of 6–13 credit points. Of all course modules included in the sports science curriculum, Module 11 has the highest, 28 credit points, which is more than the entire modules for the general courses.

The list of teaching strategies and assessment techniques are compatible with the essence of student-centered approach and continuous assessment. Also, the list contains items that are compatible with the Sports Science students' assessment preference. For example, a study revealed that sports science students prefer those assessment strategies like self-assessment, observation and peer assessment, among others (Arslan, 2013).

While the curriculum component did tell the proportion of modules belonging to each category of program, it did not tell those courses offered in a particular semester. With the intention to provide information about the courses modules and their combinations in a particular semester, we did take randomly a course distribution of a single semester.

3.2. Alumni's interviews

Analyses of the alumni responses to telephone interviews yielded two primary categories related to their perspectives regarding the sports science curriculum: (a) benefits rendered from the curriculum (program) and (b) curriculum (program) implementation and its associated factors. Sub-categories were developed that further sub-divide the views and comments participants had with the implementation of Sports Science curriculum. The two major sub-categories were: Positive factors and negative factors. The positive factors further decomposed into two categories, including 1. Teachers' motivation, encouragement and commitment. 2. Students' continual study efforts and practices beyond the regular classes. Similarly, the negative factors were sub-divided into four distinctive categories, including

Table 2
Distributions of means and standard deviations for cumulative grade point average of the first-year first semester and final-year last semester.

Entry year	*N*	Preparatory School Completion Result		*N*	First-year first semester cumulative grade point average		Graduation year last semester cumulative grade point average	
		Mean	SD[a]		Mean	SD	Mean	SD
2007 entry	44	270.82	26.80	51	2.54	0.48		
2008 entry	58	248.05	22.22	68	2.16	0.66		
2009 entry	51	211.33	24.07	52	2.35	0.57		
2010 entry	56	391.13	25.57	74	2.40	0.51		
2011 entry	65	371.34	23.43	116	2.33	0.61		
	274	**303.36**	**75.271**	361	**2.34**	**0.59**		

Graduation year	*N*	*M*	SD
2010 graduate	47	2.61	0.45
2011 graduate	46	2.74	0.53
2012 graduate	61	2.63	0.39
2013 graduate	52	2.77	0.38
2014 graduate	94	2.86	0.45
	300	**2.74**	**0.45**

Note: Entry year starts in september of each year and graduation year ends in June of the next year. This is the very reason for the difference in years between entry and graduation.

[a] Standard deviation.

Table 3
Differences in students' Preparatory School Completion Result, first-year first semester cumulative grade point average, and graduation-year last semester cumulative grade point average between males and females.

Variable	Male		Female		95% CI[d]		df[g]	*t*	Cohen's *d*[h]
	Mean	SD[c]	Mean	SD	LL[e]	UL[f]			
Preparatory School Completion Result	300.24		301.87		292	309	286	−0.166	
FSCGPA[a]	2.46	.59	2.09	.49			359	5.75***	.69
GSCGPA[b]	2.81	.46	2.55	.36			330	4.68***	.63

Note: [a]First-year first semester cumulative grade point average; [b]Graduation-year last semester cumulative grade point average; [c]Standard Deviation [d]Confidence Interval; [e]Lower Limit; [f]Upper Limit; [g]degrees of freedom; [h]Effect size.
Effect size δ is defined as the ratio of the difference between the mean values of the sports science male group and the female group over the pooled standard deviation, $\delta=(\mu 1-\mu 0)/\sigma$.
Significance levels. *$p<.05$, **$p<.01$, ***$p<.001$.

1. Lack of interest to join the program,
2. Inconvenient arrangement of courses
3. Poor student-teacher relations,
4. Lack of resources both human and material, and
5. More focused for theory or practice.

3.3. Quantitative data

3.3.1. Descriptive statistics

In the case study, we used descriptive statistics to present information that helps us to describe the level of academic achievement scores of sports science students in the database as well as determine overall trends and the distribution of the data. Table 2 presents the summary of the descriptive statistics for the different variables used in the quantitative study.

As shown in Table 2, students' Preparatory School Completion Result has declined from 2007 up until 2009 and then went very high in 2010 and finally stayed high with the slightest decrease in 2011. Table 3 also shows that students' Preparatory School Completion Result reached to a comparable low level for the 2009 entry students than others with an average completion score of 211.

As presented in Table 3, the average mean score of students' first-year first semester cumulative grade point average and graduation-year last semester cumulative grade point average was 2.34 and 2.74, respectively. However, results are comparable; the mean results of the students' first-year first semester were relatively higher for 2007 entry-year compared with others. Similarly, sports science students' average score of the graduation year last semester was higher for the 2014 graduates compared with others.

3.3.2. Group mean differences

In this study, mean differences were computed to test whether or not students' Preparatory School Completion Result, first-year first semester cumulative grade point average, and graduation-year last semester cumulative grade point average differ across gender, entry-years, and graduation years. Table 3 presents the means and standard deviations for students of males and females.

As shown in Table 3, the analysis of mean difference for the variable first-year first semester cumulative grade point average revealed a significant variation between groups (males and females), $t(5.75)$, $p<.001$, effect size .69 *Standard*

Table 4
Comparison of first-year first semester cumulative grade point average by the year students enrolled in the program (Sidak) ($N=362$).

Entry year	2007 entry	2008 entry	2009 entry	2010 entry
2008 entry	−.375			
	.005**			
2009 entry	−.180	.194		
	.697	.511		
2010 entry	−.136	.239	.045	
	.885	.135	1.00	
2011 entry	−.205	.170	−.024	−.069
	.297	.432	1.00	.996

Significance levels. * $p<.05$, ** $p<.01$, *** $p<.001$.

Table 5
Comparison of graduation year last semester cumulative grade point average by the year students completed or graduated (Sidak) ($N=300$).

Graduation year	2010	2011	2012	2013
2011	−.134			
	.787			
2012	−.023	−.11		
	1.000	.891		
2013	−.160	.239	.136	
	. 527	.135	0.656	
2014	−.255	.121	−.232	−.095
	. 013*	.741	.015*	.906

Significance levels. $p < .05$, ** $p < .01$, *** $p < .001$.

Deviation. Similarly, the analysis of mean difference for the variable graduation-year last semester cumulative grade point average shows a significant variation between groups (males and females), $t(4.68)$, $p < .001$, effect size .69. However, analysis of mean difference for the variable Preparatory School Completion Result did not reach the level of significant variation between groups. The researchers computed analysis of variance to check whether significant differences exist in students' total scores of the first-year first semester and graduation-year. Table 4 shows the means and standard deviations for each entry-year group.

As shown in Table 4, the analysis of variance revealed a statistically significant difference between the groups of students entered in 2007 and 2008, $F(3,8)$ 8.98, $p < 0.01$. A similar analysis was conducted to examine mean differences across the students' graduation years. Table 5 shows the summary of the variance test.

As shown in Table 5, the analysis of variance revealed a statistically significant difference between groups of students graduated in 2014 compared with students graduated in 2010 and 2012. In both cases, the graduates of 2014 scored relatively higher than the graduates in 2010 and 2012.

3.3.3. Correlation analyses

We used Pearson correlation analysis for the total sample group to measure the extent of associations that exist between variables. The studied variables were student's gender, age, region from which the student came, Preparatory School Completion Result, the year students enrolled in the program, year of completion, first-year first semester cumulative grade point average, and graduation-year last semester cumulative grade point average. Table 6 presents the total group inter-correlations.

As shown in Table 6, students gender was found a significant correlate of their ages, the year they enrolled in the program and completed the program, their first-year first semester cumulative grade point average, and their graduation-year cumulative grade point average (r ranging from $-.290$ to .140 and p ranging from .016 to $< .01$) for the total group. Furthermore, as expected modest to moderate inter-correlations were revealed between Preparatory School Completion Result and the other four variables, including the year students enrolled in the program, year of completion, first-year first semester cumulative grade point average, and graduation year cumulative grade point average (r ranging from .146 to .679 and p ranging from .007 to $< .01$). Other significant correlations were also revealed among key variables of the study. The year students enrolled in the program was correlated with year of completion ($r=.980$, $p < .01$), and the graduation year cumulative grade point average ($r=.228$, $p < .01$). In addition, first-year first semester cumulative grade point average was correlated with and graduation year cumulative grade point average ($r=.871$, $p < .01$).

Table 6
Total group inter-correlations for the variables used in the quantitative study.

Variables	1	2	3	4	5	6	7	8
1.Student's gender	–							
2. Age	−.268**	–						
3. Region from which the student came	.024	−.049	–					
4. Preparatory School Completion Result	.010	−.043	−.238**	–				
5. The year students enrolled in the program	.112*	.071	−.069	.679**	–			
6. Year of completion	.140**	.087	−.069	.668**	.980**	–		
7. FSCGPA[a]	−.290**	−.026	−.032	.146**	−.021	−.011	–	
8. GSCGPA[b]	−.261**	.050	−.026	.228**	.225**	.190**	.871**	

Note: [a]The First-year first semester cumulative grade point average; [b]Graduation-year cumulative grade point average.
** Correlation is significant at the .01 level (1-tailed).
* Correlation is significant at the .05 level (1-tailed).

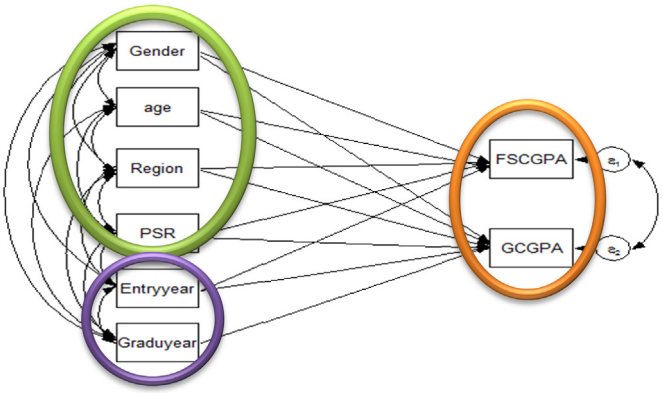

Fig. 1. The regression models drew for the dependent variables first-year first semester cumulative grade point average and graduation-year cumulative grade point average.

Hypothesis 1. Undergraduate sports science students' academic achievement in university would be influenced by their demographic characteristics.

Hypothesis 2. Undergraduate sports science students' academic achievement in university would be influenced by their prior achievement in preparatory school.

Hypothesis 3. Undergraduate sports science students' academic achievement in university would be influenced by their years of attending university.

Hypothesis 4. Undergraduate sports science students' academic achievement in graduation would be influenced by their prior achievement in the first-year of a university.

3.3.4. Regression results

3.3.4.1. The regression models. Regression analysis examines the presence relationship between two or more variables. By looking into the standardized beta coefficient (β) it is possible to understand the strength of influence an independent variable exerts on the dependent variable. In the case study, we used two separate multiple regression models to determine which of the demographic variables have a significant influence on the student's first-year first semester cumulative grade point average and graduation-year cumulative grade point average. Later on to check whether or not the first-year first semester cumulative grade point average has an influence on the graduation-year cumulative grade point average, we used another multiple regression

Table 7
Two-stage multiple regression models predicting grade point averages ($N=287$).

Prediction	Predictor	Step 1				Step 2			
Model 1		*B*	*SE*[a]	*T*	*β*				
FSCGPA[b]	Gender	0.38	0.08	5.01	.30***				
	Age	−0.03	0.02	−1.79	−.11				
	Region	−0.01	0.02	−0.31	−.02				
	Preparatory School Completion Result	0.00	0.00	0.89	.07				
	Entry-year	0.04	0.03	1.27	.10				
	R^2	.9							
	F for change in R^2	6.46***							
Model 2	Predictor	*B*	*SE*	*T*	*β*	*B*	*SE*	*T*	*β*
GSCGPA[c]	Gender	0.30	0.06	4.82	0.29***	0.09	0.03	3.03	0.09
	Age	−0.01	0.01	−0.92	−0.05	0.00	0.01	−0.21	−0.01
	Region	0.00	0.02	0.00	0.00	0.00	0.01	0.13	0.00
	Preparatory School Completion Result	0.00	0.00	0.12	0.01	0.00	0.00	−2.06	−0.08*
	Entry-year	0.16	0.10	1.67	0.52	0.08	0.04	1.75	0.25
	Graduation-year	−0.06	0.10	−0.60	−0.18	0.02	0.04	0.4	0.06
	FSCGPA					0.69	0.02	31.39	0.84***
	Adjusted R^2	.16				.82			
	F for change in R^2	9.50***				179.39***			

Note: [a]*Standard error;* [b]*first-semester grade point average;* [c]*graduation semester grade point average.*
Significance levels. *$p < .05$, ** $p < .01$, *** $p < .001$.

including the first-year first semester cumulative grade point average cumulative grade point average as an independent variable together with the other demographic variables. Fig. 1 presents the model summary of the first two models.

As it is illustrated in Fig. 1, there are two clusters of regression models drawn from the independent variables including the demographic characteristics of the students, their entry and graduation years to the outcome variables first semester and last semester cumulative grade point average. Table 7 presents the summary statistics for the regression analysis.

As shown in Table 7, findings for the total group revealed that gender significantly predicted first-semester grade point average, $\beta = .30$, $t = 5.01$, $F(1, 93) = 6.46$, $p < .01$, accounting for 9% of the variance and graduation-year cumulative grade point average, $\beta = .29$, $t = 4.82$, $F(1, 93) = 9.50$, $p < .01$, accounting for 16% of the variance. Among the other independent variables, a couple of significant findings were revealed. For the third regression model predicting graduation-year cumulative grade point average, FSC grade point average significantly predicted scores on graduation-year cumulative grade point average, $\beta = .84$, $t = 31.39$, $F(1, 25) = 179.39$, $p < .02$, accounting for 82% of the variance. In addition, Preparatory School Completion Result significantly predicted scores on GSC grade point average, $\beta = -0.08.52$, $t = -2.06$, $F(1, 25) = 179.39$, $p < .05$. Regardless of this, the other independent variables did not reach to the level of significance in predicting the measured outcome variables of interest.

The students' age, the region from where they came from, and their years of entry to university are not related to students' overall academic achievement both for first-year and graduation year, but, not surprisingly, gender is clearly associated with the academic achievement both for the first-year and graduation year. Only two of the demographic characteristics of the students were significant positive predictors of academic success during the university years the direction of findings indicating that gender strongly contribute to academic success. This is consistent with the pattern of associations reported by Crawford et al. (2010), an average male sports science student achieves higher than his female counterparts in terms of academic outcomes as measured by cumulative grade point average during the university years.

Consistently, students' first-year first semester cumulative grade point average strongly positively predicted graduation year cumulative grade point average over and above any other demographic variable. Such a clear pattern of associations across years of study appears to support a systematic relationship between students' earlier academic achievement in university and their academic achievement in later year to graduation. The strongest predictor of academic success on graduation was the student academic achievement during the first-year of university, which essentially describes the 'involving quality' and correspondence of the basic connections between first-year success and success at graduation. When this is seen from motivational perspective, it does appear to confirm the assertion that earlier success in university better explains later success in university and beyond (Martin, 2007).

3.3.4.2. Implications for research and practice in undergraduate sports science education. Viewing through a research-based evaluation theoretical lens and recent empirical evidence, this article provides directions and guidance that would help to address important issues of undergraduate sports science education in Ethiopia. Using this evaluative framework, universities can generate rich data on the effects of undergraduate sports science education on student outcomes. This helps to promote critical self-examination and discussion among practitioners of sports science for a better understanding of what causes changes in students and what practices and conditions in the university environment will facilitate or inhibit undergraduate sports science student growth and development. A key innovation of this research-based evaluation imperative is the collection of multiple data reflecting over-arching issues of the undergraduate sports science education and highlighting that the sports science program is evaluated from diverse perspectives, at the same time, illustrating the nexus between evaluative research and practice.

Moreover, the contextual nature of the data helps to stimulate discussion on undergraduate sports science program and this provides an opportunity to find better solutions to quality problems and the attainment of a variety of learning and development outcomes. The cumulative effect of this helps to promote quality in the undergraduate sports science education in Ethiopia, and other similar countries in sub-Saharan African.

4. Conclusions

To stimulate functional researchers' motivation and interest in evaluating undergraduate sports science education based on research evidence, and strengthen development, this article introduces a research-based evaluation framework based on evaluation theory and tailored that to the realities of undergraduate sports science education in Ethiopia. Results of the case study indicate the appropriateness of the undergraduate sport science education consisting of major curricular elements, and highlight how the cross-sectional and longitudinal survey designs in combination could serve to provide multiple perceptions of alumni, and dual perspectives into the analysis of students' learning outcomes. Moreover, several group differences, strong correlations, and predictions of important variables become apparent in the population under study.

In this article, we argue for evidence-based practice in evaluating undergraduate sports science education. A case study of the application of the framework shows that it has several benefits to help universities generate valuable institutional evidence basis to inform changes in the development of sports science education. While this article presents a case example of research-based evaluation in practice, we need more empirical work that examines how the undergraduate sports science education become implemented across multiple HE institutions and the resulted outcomes achieved over the years. Ultimately sport science educators need to acknowledge that their designed curricula are not self-sufficient entities to provide

evidence on how the undergraduate sports science education has been implemented, and its resulted outcomes within the contextual realities of the program under study. Instead, research-based evaluation practice is useful to bring relevant feedback information about the program they are realized over the years.

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