

EDUCATIONAL STRATEGIES FOR THE ACQUISITION OF PROFESSIONAL KNOWLEDGE BY YOUTH BASKETBALL COACHES

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ABSTRACT: The purpose of this study was to identify the educational means that coaches of school-aged children utilize to acquire their professional knowledge. Youth basketball coaches (n=118) with a heterogeneous education coming from different educational means participated in the study. Of them, 81.7% were previously basketball players.

As a measurement instrument, a modified version of the scale by Feu (2006) was utilized to determine the coach's professional knowledge. The new scale had 21 items distributed in seven dimensions that corresponded to three theoretical factors. The items were answered with a 5-point Likert scale.

The statistical analysis consisted of an exploratory factor analysis with varimax rotation and self-values >1 in order to determine the latent structure of the relationships between the scale's items. Previously, the Kaiser-Meyer-Olkin index and Bartlett's sphere test were analyzed. The reliability of the scale and the sub-scales was studied through the Cronbach's Alpha coefficient. The means, standard deviations, and correlations between item and scale as well as item and sub-scale were analyzed.

The exploratory factor analysis, after the elimination of five items, and the Cronbach's Alpha coefficients demonstrated that the scale and sub-scales had some adequate psychometric properties ($\alpha > .70$). All the items obtained item and sub-scale correlations greater than .40. Formal education was the factor that had the greatest acceptance among the coaches ($M=21.71 \pm 4.63$) followed by acquired experiences as a player ($M=16.70 \pm 5.64$), and then the acquired experiences and innovations as a coach ($M=13.45 \pm 2.97$).

The scale that was utilized has adequate validity and reliability to determine how the coach constructs his/her professional knowledge.

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Introduction

In sport, coaching education is heterogeneous and is obtained through different formal educational means (federations, universities or other institutions) and various informal means. Formal education is an important instrument in acquiring theoretical and practical knowledge for coaching one's sport. This learning should be carried out from practical experience and accompanied by a process of reflection on action which is guided by a mentor (Lemyre, Trudel, & Durand-Bush, 2007; Nelson & Cushion, 2006). In addition to learning through educational programs, coaches also learn through other informal means such as observation and conversations with other coaches, help from a mentor, one's own practice, self-teaching through books, journals, videos, etc. (Lemyre, et al., 2007; Wright, Trudel, & Culver, 2007). The development of professional knowledge begins to be shaped before the initial education, with previous experiences, that will form part of the preconceived ideas about the profession. In sport, athletic experiences lived out in the formative stages as a player influence the education of the future coach (Cushion, 2006; Feu, 2006; Gilbert, Côté & Mallet, 2006). Previous experiences favor the socialization of the future coach in the culture of coaching (Lemyre, et al, 2007). In sport, it is common that coaches are former athletes and use their acquired experiences (Ibáñez, 1997).

In youth sport, there are professionals with a very heterogeneous education that use various strategies to complement their education. The purpose of this study was to identify the educational means that coaches of school-aged athletes utilize, those that come from their days as a player, those acquired in some process of

formal education, or those that have been elaborated with experience.

Method

Sample: 118 youth basketball coaches participated. 23.7% were licensed in Sport Sciences and 23.7% were elementary physical education teachers. 92.4% had education from the federation: 47.5% were level III coaches, 22.9% were level I coaches, and 22% were level II coaches. 28.8% had professional educational certification related to sport. 81.7% were former basketball players.

Instrument: A modified version of the scale by Feu (2006) was utilized to determine the source of coaches' professional knowledge. The scale had three theoretical factors: use of knowledge acquired as a player, through formal education, and through experience as a coach. The new scale had 21 items distributed in seven dimensions: Source of the education, Knowledge of the sport, Methodology, Analysis and evaluation of the game, Exercises, Problem solving, and Motivation. The items were answered with a 5-point Likert scale.

Statistical analysis: An exploratory factor analysis to determine the latent structure of the relationships between the scale's items was carried out. Previously, the sample was analyzed through the Kaiser-Meyer-Olkin index ($> .70$) and the Bartlett's sphere test in order to verify whether it fulfills the hypothesis of identity. The factor analysis was done with the method of varimax rotation and self-values > 1 . The reliability of the scale was analyzed through Cronbach's Alpha coefficients.

Results

The certifications that the coaches had were studied through a contingency table, and the results indicate that the coaches had

a heterogeneous education. The sample was suitable for carrying out the factor analysis and had a Kaiser-Meyer-Olkin (KMO) index of sampling adequacy of .801. Bartlett's sphere test ($p < .001$) indicated that the score matrix fulfilled the hypothesis of identity. The factor analysis demonstrated five factors with saturations that explained 66.71% of the variance. The analysis of the communalities of the complete scale's factors demonstrated that there were items with unsuitable saturations, and thus factors 1, 4, 9, 10 and 21 were eliminated.

Once those items were eliminated, the suitability of the sample ($KMO = .807$) was again verified. Bartlett's sphere test ($p < .001$) indicated that the score matrix fulfilled the hypothesis of identity. The factor analysis demonstrated three factors that explained 63.14% of the variance (Table 1). Factor I explained the most variance (26.73%), followed

by factor II (22.67%) and factor III (13.74%). Factor II, formal education, has the greatest acceptance among participating coaches ($M = 21.71 \pm 4.63$), followed by Factor I ($M = 16.70 \pm 5.64$), experiences acquired as a player, and finally Factor III ($M = 13.45 \pm 2.97$), experiences and innovations as a coach. The scale with the eliminated items presented adequate internal consistency ($\alpha = .80$). The first ($\tilde{\alpha} = .90$) and second ($\tilde{\alpha} = .87$) factors obtained optimal reliability. The third factor obtained adequate reliability ($\tilde{\alpha} = .74$). An analysis of the items that compose the scale was done. Items 5 ($M = 3.74 \pm .99$), 7 ($M = 3.81 \pm .96$), 8 ($M = 3.68 \pm .89$), 14 ($M = 3.60 \pm .97$), and 17 ($M = 3.71 \pm .80$) had the greatest agreement. Items 3 and 17 had the lowest correlation with the entire scale. All the items obtained item and sub-scale correlations that were higher than 40.

Nº	Item	1	2	3
11	That what was learned by other coaches when I was a player	.870	.116	
19	Problem solving by utilizing the experiences I had as a player	.840		.101
6	Knowledge learned when I was a player	.839		
16	Exercises and tasks I learned when I was a player	.807		
13	Strategies that my coaches used to analyze the progression of the team	.801	.237	
2	The methods used by coaches that coached me	.699		.163
14	The methodology that I learned in educational courses		.842	
20	Confronting problems based on knowledge I learned in the courses		.835	
7	That what was learned in educational courses		.827	
12	Evaluation techniques that I learned in educational courses	.116	.778	
5	Knowledge learned in the educational courses that I have attended		.767	
17	Exercises and tasks learned in educational courses, books, journals,...		.597	
18	Acquired experience from the exercises that I create		.113	.807
3	Solving problems that come up in training sessions with solutions that I invent	.102	-.163	.757
15	I maintain motivation through strategies that I invent			.747
8	The methods that I have created with my own experience	.153		.685

Table 1. Factor analysis with varimax rotation.

Discussion

The coaches that participated in this study have a heterogeneous initial education with regard to certifications and levels of education and it is even observed that there are coaches that have obtained education through various means (Feu, 2006; Viciano & Zabala, 2004).

For the validation of the new scale, the scale elaborated by Feu (2006) was utilized, adding three new dimensions and eliminating one. The intent of this modification of the dimensions was to improve the content validity by reaching a wider spectrum of the functions that develop the coach. To validate the resulting scale, it was necessary to carry out an exploratory factor analysis (Feu, Ibáñez, & Gozalo, 2007). This analysis of the psychometric properties of the scale about the source of professional knowledge employed by the coach confirms (after the elimination of five items) the existence of three factors with construct validity and whose items present weights above .40 (Tabachnick & Fidell, 2007). Of the eliminated items, three corresponded to factor III which is oriented toward the knowledge elaborated from one's own experience. This factor is possibly the most complex since coaches always provide ideas and resources from their own elaboration in order to adapt resources obtained by other means. The other two eliminated items belong to the motivation dimension; the knowledge acquired to motivate athletes should be studied in greater detail. The scale that was used

obtained an optimal reliability with adequate Cronbach's alphas ($\alpha < .70$) both for the scale as well as the obtained sub-scales (Nunnally & Bernstein, 1994). The new scale differs from that proposed by Feu (2006) in factor III, with a slightly lower alpha. The descriptive statistics about the source of professional knowledge indicates that among the coaches that participated formal education (initial education, courses, seminars, etc...) has greater importance, followed by the knowledge acquired in the experiences lived out as a player, and finally, in the experience acquired as a coach. Formal education, and above all initial education, is important for the coach as he/she works with preconceived ideas through his/her experience as a player and his/her own process of learning (Bell, 1997). It is necessary to carry out a reflective process on one's own action (Lemyre, et al. 2007, Nelson & Cushion, 2006). However, experiences as a player and the observation of oneself as a coach are essential for the education of the future coach (Cushion, 2006).

Conclusions

The scale that was utilized has adequate validity and reliability to determine how the coach constructs his/her professional knowledge. Coaches mostly use the knowledge acquired formally through courses, journals, books, etc. Future studies should consider how coaches acquire knowledge and skills for the motivation of their athletes.

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