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Factors Associated with Self-Determined Motivation in Young Basketball Athletes: A Systematic Review

Alexandro Andrade[1*], Quezia dos Santos Goes[2] Danilo Reis Coimbra[3]

Resumen

El presente estudio tuvo como objetivo analizar factores psicológicos y psicosociales asociados con la motivación autodeterminada de jóvenes atletas de baloncesto a través de una revisión sistemática. Se identificaron 377 artículos a partir de un enfoque sistemático siguiendo la declaración de PRISMA a través de bases de datos electrónicas (Web of Science, PubMed, Science Direct, SportDiscus, PsyInfo, Scopus y Scielo). Solo se incluyeron artículos originales de revisión por pares publicados en inglés, español o portugués que se enfocan en de jóvenes atletas de baloncesto y se investigó la motivación autodeterminada. Catorce estudios fueron incluidos en síntesis cualitativa. Se investigan 3,396 jóvenes de baloncesto y 37 factores psicológicos y psicosociales asociados con una motivación autodeterminada de jóvenes atletas de baloncesto. Los instrumentos más utilizados para analizar la autodeterminación de los jóvenes atletas de baloncesto fueron la Escala de Motivación Intrínseca y la Escala de Motivación Deportiva. Se concluye que el clima motivacional del entrenador y las necesidades psicológicas básicas fueron los principales antecedentes psicosociales y psicológicos, respectivamente, asociados a la motivación autodeterminada de los jóvenes atletas de baloncesto. Considerando que poner más esfuerzo en la formación fue la principal consecuencia asociada a la motivación autodeterminada.

Palabras clave: motivación; teoría de la autodeterminación; deportes de equipo; joven; revisión.

Self-determination theory (SDT) has emerged as the most theoretical frameworks used in recent years to understand the motivation of athletes in sports practice (Alcaraz, Torregrosa, Viladrich, Ramis, & Cruz, 2014; Fernandez-Rio, Méndez-Giménez, & Estrada, 2014). SDT explains motivation through a continuum, from the most self-determined (intrinsic motivation), through regulation (extrinsic motivation) to the less self-determined motivation (Almagro, Sáenz-López, Moreno-Murcia, & Spray, 2015; Deci & Ryan, 1985, 2008; Gagné & Deci, 2005). According to SDT, autonomous motivation includes intrinsic motivation (IM), which can be derived from (a) knowledge or satisfaction in learning new things; (b) performance, pleasure, and a feeling of satisfaction in reaching some goal; (c) and a stimulating experience. This also includes integrated regulation and identified regulation (Owen, Smith, Lubans, Ng, & Lonsdale, 2014). On the other hand, controlled forms of motivation include external regulation, which is performing an activity to gain benefits or avoid punishment, and introjection, which is performing an activity to avoid guilt and external pressure (Bara Filho et al., 2011; Deci & Ryan, 2002; Vallerand et al., 1992; Ryan & Deci, 2000). Finally, there is amotivation, which describes when an individual does not feel satisfied with his/her practice and does not have any intrinsic or extrinsic influences. Thus, in SDT, the forms of motivation that are conceptualized in the theoretical framework underpin from non-autonomous to completely autonomous forms of behavioral regulation (Teixeira, Carraça, Markland, Silva, & Ryan, 2012).

Other concepts introduced in SDT are the underlying basic psychological needs (BPNs) in self-determined motivation: perceptions of competence, relatedness, and autonomy (Deci & Ryan, 1985, Deci & Ryan, 2000). Competence is the feeling of being able to accomplish something; relatedness is the need to give importance to true and positive relationships with others and the need for this to be reciprocal; autonomy is the degree to which an individual perceives him or herself to be responsible for his or her choices (Gunnell, Crocker, Mack, Wilson, & Zumbo, 2014; Moreno-Murcia, Gimeno, & Coll, 2007; Perreault & Vallerand, 2007; Teixeira et al., 2012). SDT argues that these psychological needs are antecedents to self-determined motivation and are central to its understanding (Teixeira et al., 2012).

Motivational climate refers to the influence of social-environmental factors and the antecedent determinants of motivation (Sheehan, Herring, & Campbell, 2018). In the sports context, there are coaches, peers, parents, and referees. Among them, coaches are the most important factor in determining the motivational climate and in influencing athletes' self-determined motivation through

[1] Santa Catarina State University, Florianópolis, SC, Brazil. *Correspondence Author E-mail: alexandro.andrade.phd@gmail.com
[2] Lithuanian Sports University – LSU, Lithuania
[3] Federal University of Juiz de Fora, Juiz de Fora, MG, Brazil.

the emphasis on a task-oriented climate and avoiding an ego-involving climate. This is a dichotomy surge from Achievement Goal Theory (Nicholls, 1989). It is a common antecedent that interacts with BPNs in sports (Riley & Smith, 2011) and is essential to engagement and maintenance in youth sports (Curran, Hill, Hall, & Jowett, 2015). The motivational model of the coach-athlete relationship proposes that the coach's autonomy-supporting behaviors should influence the athletes' perceptions of their own competence, autonomy, and relatedness, leading to self-determined motivation. Furthermore, evidence points to important consequences of self-determined motivation in young athletes (Sheehan et al., 2018), such as effort, commitment, achievement goals, enjoyment, and performance (Mouratidis & Lens, 2015; Sánchez-Oliva, Leo, González-Ponce, Chamorro, & García-Calvo, 2012; Wang, Koh, & Chatzisarantis, 2009).

To investigate self-determined motivation in athletes, some instruments have been developed and validated for different contexts. The most used instruments are the Sports Motivation Scale (SMS; Pelletier et al., 1995), which asses IM, EM and Amotivation. Based on the improvement confirmatory factor analysis (CFA) goodness-of-fit indices of a six-factor mode (Mallett, Kawabata, Newcombe, Otero-Forero, & Jackson, 2007), the SMS had high internal consistency in intrinsic motivation (α = 0.81) and regulation motivation (α = 0.70 to 0.83).

Sports practice has been one of the most studied environments when it comes to understanding the motivation of adolescents (Hansen & Larson, 2007). Participation in sports can improve social relationships, respect, mental health, confidence, positive social behavior, and competence (Brandt et al., 2014; Deschamps & De Rose, 2008; Dimech & Seiler, 2011; Eime, Young, Harvey, Charity, & Payne, 2013; Holt, Kingsley, Tink, & Scherer, 2011; Razakou, Tsapakidou, Beis, & Tsompanaki, 2003; Snyder et al., 2010). Thus, if adolescents engage in sports, these benefits may carry over to adulthood (Strauss, Rodzilsky, Burack, & Colin, 2001). Young athletes closely interact with various other individuals such as coaches, teammates, referees, and parents, who may also influence the motives of the athlete (Leo Marcos, Sánchez-Miguel, Sánchez-Oliva, Amado, & García-Calvo, 2015; Palou et al., 2013). Thus, a coach motivational climate and perception of competence may also influence young athletes' self-determined motivation (Adie, Duda, & Ntoumanis, 2012; Alvarez, Balaguer, Castillo, & Duda, 2012; Amiot, Gaudreau, & Blanchard, 2004;; Garcia-Mas et al., 2015; Jõesaar, Hein, & Hagger, 2011; Jowett, Hill, Hall, & Curran, 2013; Reinboth, & Duda, 2006; Stoeber, 2011).

Basketball is a sport played by millions of young athletes around the world, and it is the most popular team sport in American schools (Cohen & Metzl, 2000). Court-based team sports have been studied over the last decade (Stojanović et al., 2017). However, most studies that have investigated self-determined motivation have grouped several sports in their focus (Mohd Kassim & Boardley, 2018), and some studies have demonstrated that basketball athletes are different from those in other team sports (Coimbra et al., 2013). Torres, García, Moreno-Murcia, and Buñuel (2009) verified that basketball players obtained higher values than football players in self-determined motivation, IM for accomplishment, and task. Therefore, it is necessary to understand the antecedent factors that lead young basketball players to self-determined motivation as well as the emotional, psychological, and performance consequences of that sport practice.

Examining the factors in young basketball athletes' self-determined motivation would contribute to systematizing and synthesizing knowledge on the subject, and this may have implications for performance in sports and sports practice. In this sense, a systematic review is necessary to investigate the results presented by studies on young basketball athletes and to analyze the main factors that lead them to self-determined motivation and enable them to remain in the modality. Such evidence can be used to support practical applications and guide future studies. Therefore, the objective of the present study is to analyze the psychological and psychosocial factors associated with the self-determined motivation of young basketball athletes through a systematic review. More specifically, this will be a conceptual thematic analysis to promote a compressive model for practice application, helping coaches to understand athletes' motivation, which may assist in optimizing future research designs on this topic.

Method

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009) were used to guide this systematic review.

Search Strategy

Thorough electronic searches of the following databases were conducted, current to March 2019: Web of Science, PubMed, Science Direct, SPORTDiscus, PsycINFO, Scopus, and Scielo. These databases are well established and have been used in previous systematic reviews in sports psychology (Gledhill, Harwood, & Forsdyke, 2017; Norris, Didymus, & Kaiseler, 2017). The search terms were defined in combinations of two groups of keywords following discussions between the authors and using

similar previous systematic review studies (Owen et al., 2014; Stojanović et al., 2018). The following terms were used: basketball OR basketball players AND self-determination OR self-determination theory OR self-determined motivation OR autonomous motivation OR controlled motivation OR intrinsic motivation OR extrinsic motivation. Searches were performed using the title, abstract, and subject fields. A manual search on the references of selected studies was performed to identify studies that could be a part of the review.

Criteria for Eligibility

The following inclusion/exclusion criteria were applied in this systematic review: they must be original, peer-reviewed articles published in the English, Spanish, or Portuguese language. No temporal criteria were established. Papers should present original data from young basketball athletes and investigate self-determined motivation. Articles were excluded if they were published as books, abstracts, revisions, dissertations, theses, or conference proceeding articles or if they focused on other modalities, other populations (undergraduates, professional athletes, and coaches), or multi-sport studies that included but did not report results specific to basketball. Validation studies were excluded if there were no results specific to basketball. Only studies with quantitative methods were considered eligibile.

Sifting Articles and Study Selection

For greater reliability, study selection was performed by peer review (Sampson et al., 2009) and by researchers (QSG and DRC). In cases of disagreement, a final opinion was sought from a third person (AA). The search process resulted in 377 articles. Records were exported into a Microsoft Excel® spreadsheet and read first by title, after which 151 duplicates were excluded. Then, 49 were excluded by title, and 177 abstracts were read. Of these, 94 abstracts were excluded (see reasons in Figure 1). Finally, 83 full texts were read, and 68 of those were excluded (see reasons in Figure 1). Fourteen full-text articles met the inclusion criteria and were included. See Figure 1.

Data Extraction

Each article in the final sample was read, and data were extracted to develop a comprehensive table of study characteristics (Table 1). The following data were extracted and analyzed: participant characteristics (sample size, sex, age, level, and country), study design, variables, and instruments used. In addition, the instruments of self-determined motivation or related to motivation and the key findings of the studies were extracted for analysis. The data extraction and synthesis of the study results were performed by peer review (DRC and QSG), independently appraising the papers. In cases of disagreement, a final opinion was sought from a third reviewer (AA) in a team meeting. A convergent thematic analysis followed, in order to synthesize the data extracted from the results (Centre for Reviews and Dissemination [CRD], 2009). The thematic analysis involved identifying the main or recurring themes and synthesis are summarized under thematic headings and is typically used for detecting, grouping, and summarizing findings from studies (Pope, Mays, & Popay, 2007). After the thematic analysis, conceptual maps were developed. The conceptual map provide a visual representation showing the relationships between concepts, including cross connections among concepts, and their manifestations of key findings and thematic analyses (Eppler, 2006). The concepts in the maps were extracted from the studies selected. The head concepts and arrows between the key findings emerged from a discussion and critique among the team of authors. This strategy of thematic analysis and conceptual maps of key findigns was based on a recent study on psychosocial factors associated with talent development in football (Gledhill, Harwood, & Forsdyke, 2017).

Results

Characteristics of the Publications

The description of the participants' characteristics, type of study, variables analyzed, and instruments used are presented in Table 1. The period in which the 14 articles were published ranged from 2007 to 2015. Regarding the research design, 12 studies were cross-sectional, and 2 were longitudinal.

Demographic Characteristics

The total sample investigated in the 14 studies included 3,396 young basketball athletes (ranging from 61 to 606 athletes), of whom 2,059 were boys and 1,175 were girls (one study did not report these numbers). The athletes ranged in age from 7 to 19 years. Three studies focused on athletes in a summer camp, and three focused on school activities. The other eight studies reported on regional or national athletes. The samples were formed by athletes from Spain (n = 6), Greece (n = 3), the United States (n = 2), Singapore, Brazil, and Canada (n = 1). SeeTable 1.

Thematic Analysis of the Variables

We identified nine themes in the 14 studies and a total of 37 variables that were investigated (ranging from one to eight): *theoretical frameworks related to self-determined motivation* (seven variables associated), *psychosocial antecedents* (nine variables associated), and *psychological antecedents* (three variables associated). Regarding

consequence themes, there were four variables related to *performance*, one related to *external psychosocial factors*, four related to *internal psychological factors*, and three variables each related to *emotional*, *behavior*, and *future prospect factors*. A conceptual map was made to illustrate the thematic analysis (Figure 2). See Figure 2

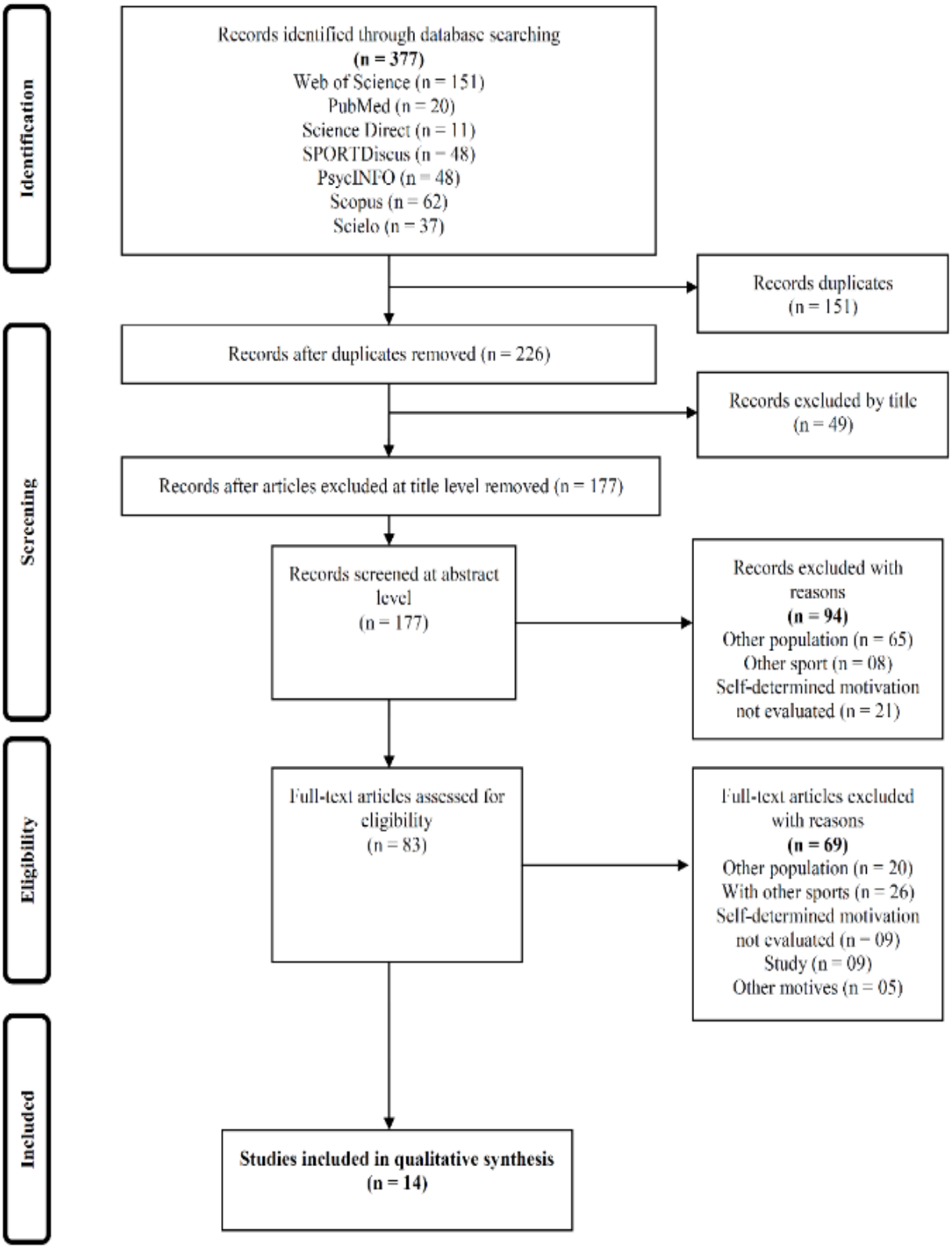

Figure 1. PRISMA flow diagram summarizing the study selection criteria.

Table 1

Descriptive summary of the publications selected for the systematic review.

N°	Study	Participants			Study Design		Variables	Instruments
		N (B/G)	Years	Level	Country			
#1	Mouratidis & Lens (2015)	61 (53/08)	Mean: 14.4	Summer Basketball Camp	Greece	Long.	Future Time Perspective	TPI
							Autonomous Motivation	BRSQ
							Controlled Motivation	BRSQ
							Competence	PNSE
							Self-Determined Motivation	SDS
							Autonomy	SLCQ
							Enjoyment	IMI
							Vitality	SVS
							Effort	IMI
#2	Alexandra, Stefanos, & Vassilis (2015)	180 (144/36)	15-19	Athletes from Athens, Thessaloniki and Trikala	Greece	CS	Verbal Aggressiveness	VAQ
							Extrinsic Motivation	IEMS
							Intrinsic Motivation	IEMS
#3	Pulido, Sánchez-Miguel, Leo, Sánchez-Oliva, & Amado (2013)	284 (149/135)	11-16	Federated Athletes from Autonomous Community of Extremadura	Spain	CS	Basics Psychological Needs	MMS
							Self-Determined Motivation	SMS
							Respect to Rules	MSOS
							Respect to Opponents	MSOS
#4	Iwasaki & Fry (2013)	138 (102/36)	7-18	Summer Basketball Camp	USA	CS	Caring Climate	CCS
							Coaches Motivational Climate	PMSCQ
							Intrinsic Motivation	IMI
							Future Desire to Participate	3-item Measure Likert Scale
							Caring Behaviors	CBS
#5	Gómez-López, Granero-Gallegos, Abraldes, & Rodríguez-Suárez (2013)	292 (202/90)	14-18	Federated from Region of Murcia	Spain	CS	Perception of Success	POSQ
							Self-Determined Motivation	SMS
#6	Coterón, Sampedro, Franco, Pérez-Tejero, & Refoyo (2013)	131 (79/52)	Mean: 15.75	Athletes from Autonomous Community of Madrid	Spain	CS	Basics Psychological Needs	PNSE
							Flow Feeling	FSS
#7	Sánchez-Oliva, Leo,	284 (149/135)	11-16	Teams of the Autonomous	Spain	CS	Coaches Motivational Climate	PMSCQ

N°	Study	Participants			Study Design		Variables	Instruments
		N (B/G)	Years	Level	Country			
	González-Ponce, Chamorro, & García-Calvo (2012)			Community of Extremadura			Peer Motivational Climate	PEERMCYSQ
							Parental Motivational Climate	PISQ
							Basics Psychological Needs	EMM
							Intrinsic Motivation	EMD
							Commitment	SCQ
#8	Almagro & Conde (2012)	261 (177/84)	12-17	Teams from an Andalusian Province	Spain	CS	Coaches Motivational Climate	PMSCQ
							Basics Psychological Needs	PNSE
							Self-Determined Motivation	SMS
							Intention to be Physically Active	IPAS
#9	Riley & Smith (2011)	211 (90/121)	12-15	Middle and High School	USA	CS	Coach-Athlete Relationship	CARQ
							Friendship Quality	SFQS
							Peer Acceptance	SPPA
							Autonomy	5-item Measure Likert Scale
							Competence	IMI
							Relatedness	NRS
							Self-Determined Motivation	SMS
#10	Mouratidis, & Michou (2011)	81 (71/10)	Mean: 14.3	Summer Basketball Camp	Greece	Long.	Perfectionism	MPS
							Competence	PNSE
							Autonomous motivation	BRSQ
							Controlled motivation	BRSQ
							Self-Determined Motivation	SDS
							Effort	IMI
#11	Moreno-Murcia & Marín (2011)	606 (405/201)	Mean: 13.67	Local and Regional	Spain	CS	Peer Motivational Climate	PEERMCYSQ
							Intrinsic Motivation	BREQ
							Performance Error Evaluation	PFAI
#12		264	14-17	High School	Singapore	CS	Leadership	LSS

N°	Study	Participants			Study Design		Variables	Instruments
		N (B/G)	Years	Level	Country			
	Wang, Koh, & Chatzisarantis (2009)	(162/102)					Basics Psychological Needs	BNSWQ
							Behavioural Regulation	PLOC
							Achievement Goal	AGQ
							Effort	IMI
							Enjoyment	IMI
#13	Balbinott, Saldanha, & Balbinotti (2009)	441 (276/165)	13-16	Local, Regional and Nacional	Brazil	CS	Motivation	IMPRAFE
#14	Blanchard, Mask, Vallerand, Sablonniére, & Provencher (2007)	162 (NR)	13-18	High School	Canada	Long.	Self-Determined Motivation	SMS
							Situational Motivation	SIMS
							Personal Performance	3-item Measure Likert Scale
							Team Performance	2-item Measure Likert Scale

Note: B: Boys; G: Girls; NR: Not Reported; USA: United States of America; CS: Cross-Sectional; Longit.: Longitudinal; TPI: Time Perspective Inventory; BRSQ: Behavioral Regulation in Sport Questionnaire; PNSE: Psychological Need Satisfaction in Exercise Scale; SDS: The Self-Determination Scale; SLCQ: Sport and Learning Climate Questionnaire; IMI: Intrinsic Motivation Inventory; SVS: Subjective Vitality Scale; VAQ: Verbal Aggressiveness Questionnaire; IEMS: Intrinsic and Extrinsic Motivation Scale; MMS: Motivational Mediators Scale; SMS: Sport Motivation Scale; MSOS: Multidimensional Sportspersonship Orientations Scale; CCS: Caring Climate Scale; PMSCQ: Perceived Motivational Climate in Sport; CBS: Caring Behavior Scale; POSQ: Perception of Success Questionnaire; FSS: Flow State Scale; PEERMCYSQ: Peer Motivational Climate in Youth Sport Questionnaire; PISQ: Parental Involvement Sport Questionnaire; EMM: Escala de Mediadores Motivacionales; EMD: Escala de Motivación en el Deporte; SCQ: Sport Commitment Questionnaire; IPAS: Intention to be Physically Active Scale; CARQ: The Coach-Athlete Relationship Questionnaire; SFQS: The Sport Friendship Quality Scale; SPPA: Self-Perception Profile for Adolescents; NRS: Need for Relatedness Scale; MPS: Multidimensional Perfectionism Scale; BREQ: Behavioral Regulation in Exercise Questionnaire; LSS: Leadership Scale for Sports; BNSWQ: Basic Needs Satisfaction at Work Questionnaire; PLOC: Perceived Locus of Causality; AGQ: Achievement Goal Questionnaire; IMPRAFE: Inventário de Motivação à Prática Regular de Atividade Física e/ou Esporte; SIMS: Situational Motivation Scale.

Instruments to Evaluate the Motivation of Young Basketball Athletes

We analyzed the instruments most used in the 14 studies to evaluate the self-determined motivation or related to motivation of young basketball athletes. It was observed that the Intrinsic Motivation Inventory (IMI) and the Sport Motivation Scale (SMS) were the most frequently used (five studies). Five other instruments were also used to assess motivation (Table 2). These instruments identify the motivation based on Basic Psychological Needs (PSNE), Motivational Climate in Sport (PMSCQ and PEERMCYSQ), Behavioral Regulations (BRSQ), and Self-Determination (SDS). SeeTable 2

Key Findings of Publications

Regarding the psychological and psychosocial factors associated with young basketball athletes' self-determined motivation, 43 key findings and results regarding the thematic associations were identified in the 14 studies analyzed (Table 3). First, the main psychosocial antecedent was the motivational climate associated with autonomy, competence, and relatedness (psychological antecedents). The main psychological antecedents were the BPNs associated with self-determined motivation. Second, BPNs were associated with emotional and behavioral consequences. Finally, intrinsic motivation was associated

with consequences (intention to be physically active and commitment). Two themes (Achievement Goal and Future Time Perspective), despite being analyzed, were not investigated as being associated with young basketball athletes' self-determined motivation. See Table 3

The themes of the key findings were analyzed (Figure 3). The association most investigated was the relation between psychosocial and psychological antecedents and self-determined motivation. Psychosocial antecedents were associated with the theoretical framework and psychological antecedents. See Figure 3

The aim of the present study was to analyze the psychological and psychosocial factors associated with young basketball athletes' self-determined motivation through a systematic review. This study found psychosocial factors as antecedents and consequences associated with the self-determined motivation of young athletes.

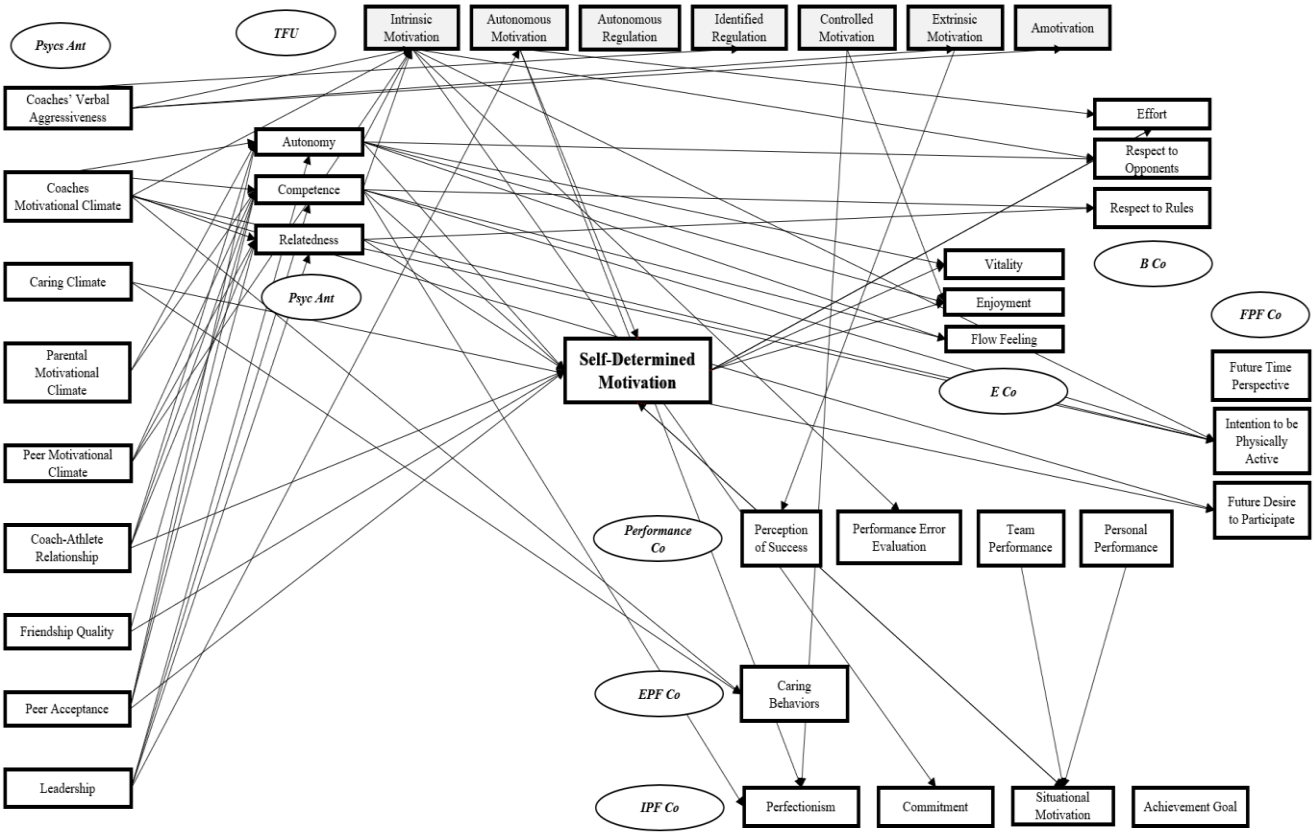

Figure 2. Conceptual map of keys findings analyses of antecedents, consequences, and theoretical framework factors associated with self-determined motivation in young basketball athletes.

Note: Arrows means association; Psycs Ant: Psychosocial Antecedents; Psyc Ant: Psychological Antecedents; TFU: Theoretical Framework Underpin; E Co: Emotional Consequence; B Co: Behavior Consequence; EPF Co: External Psychosocial Consequence; FPF Co: Future Perspective Factors; P Co: Performance Consequence; IPF Co: Internal Psychological Factors.

Table 2

Instruments most used in the studies selected for the systematic review.

Instruments	Number of Studies	N°
IMI – Intrinsic Motivation Inventory	5	#1; #4; #9; #10; #12
SMS – Sport Motivation Scale	5	#3; #5; #8; #9; #14
PNSE – Psychological Need Satisfaction in Exercise	4	#1; #6; #8; #10
PMSCQ - Perceived Motivational Climate in Sport	3	#4; #7; #8
BRSQ – Behavioral Regulation in Sport Questionnaire	2	#1; #10
SDS - The Self-Determination Scale	2	#1; #10
PEERMCYSQ - Peer Motivational Climate in Youth Sport Questionaire	2	#7; #11

Our findings suggest that the main antecedents associated with young basketball athletes' self-determined motivation were related to psychosocial factors (coach, parental, and peer motivational climates), and BPNs (autonomy, competence, and relatedness). It was found that the consequences of young basketball athletes' self-determined motivation are related to performance, external psychosocial and internal psychological factors, emotions, behavior, and future prospects. Still, it is emphasized that the studies have also brought the underlying frameworks that are related to self-determined motivation. Finally, the conceptual map presents a series of resulting relationships between antecedents and consequences that may explain how basketball can improve self-determined motivation in young athletes. The analyzed data were discussed on the basis of the topics in the following sections (Fernandez-Rio & Buela-Casal, 2009).

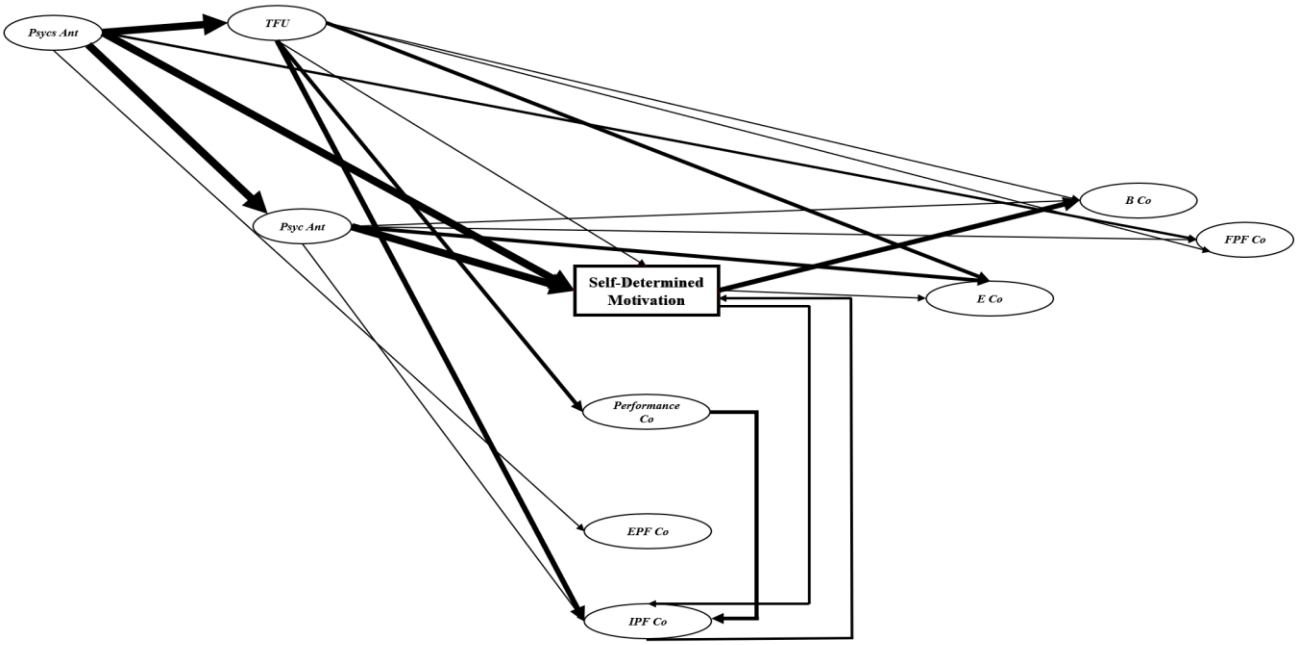

Figure 3. Conceptual map of thematic analyses of antecedents, consequences, and theoretical framework factors associated with self-determined motivation in young basketball athletes.

Note: Arrows means association; The thickness of the arrows means number of associations; Psycs Ant: Psychosocial Antecedents; Psyc Ant: Psychological Antecedents; TFU: Theoretical Framework Underpin; E Co: Emotional Consequence; B Co: Behavior Consequence; EPF Co: External Psychosocial Consequence; FPF Co: Future Perspective Factors; P Co: Performance Consequence; IPF Co: Internal Psychological Factors.

Table 3

Key findings of the studies selected for the systematic review.

N°	Study	Keys findings	Thematic analysis
#1	Mouratidis & Lens (2015)	Self-determined motivation mediated the relation between autonomy and enjoyment, vitality, and effort; Autonomy support enjoyment, vitality, and effort; Autonomous motivation predicted effort; Controlled motivation predicted negatively enjoyment;	Psyc Ant → SDM → E Co and B Co Psyc Ant → E Co and B Co Au M → B Co Co M → - E Co
#2	Alexandra, Stefanos, & Vassilis (2015)	Negative relationship between coaches' verbal aggression with intrinsic motivation and identified regulation; Positive relationship between coaches' verbal aggression with external regulation and amotivation.	Psycs Ant → - In M and Id R Psycs Ant → Ex R and AM
#3	Pulido, Sánchez-Miguel, Leo, Sánchez-Oliva, & Amado (2013)	Autonomy and intrinsic motivation were predictors of respect to opponent;	Psyc Ant and In M → B Co

N°	Study	Keys findings	Thematic analysis
		Competence, relatedness, and identified regulation were predictors to respect the rule.	Psyc Ant and Id R → B Co
#4	Iwasaki & Fry (2013)	High task and caring coach climate and low ego-involving coach climate were associated with higher intrinsic motivation, caring behaviors, and future desiring to participate in the camp.	Psycs Ant → In M, EPF Co, and FPF Co
#5	Gómez-López, Granero-Gallegos, Abraldes, & Rodríguez-Suárez (2013)	External regulation was predictor of ego perception of success; External regulation was predictor of decrease in the task perception of success.	Ex R → Ego P Co Ex R → - Task P Co
#6	Coterón, Sampedro, Franco, Pérez-Tejero, & Refoyo (2013)	Competence and autonomy were predictor of flow-feeling in boys; Competence was predictor of flow-feeling in girls.	Psyc Ant → E Co Psyc Ant → E Co
#7	Sánchez- Oliva, Leo, González-Ponce, Chamorro, & García-Calvo (2012)	Coach motivational climate predicted the autonomy, competence and relatedness; Parental motivation climate predicted autonomy and competence; Peer motivational climate predicted competence and relatedness; Autonomy and competence predicted intrinsic motivation; Intrinsic motivation predicted Commitment.	Psycs Ant → Psyc Ant Psycs Ant → Psyc Ant Psycs Ant → Psyc Ant Psyc Ant → In M In M → IPF Co
#8	Almagro & Conde (2012)	Task coach motivational climate, competence, relatedness and intrinsic motivation was predictor to intention to be physically active.	Psycs Ant, Psyc Ant, and In M → FPF Co
#9	Riley & Smith (2011)	The three social relationships together predicted self-determined motivation; Coach-athlete relationship and friendship quality predicted self-determined motivation; Coach-athlete relationship predicted autonomy, competence and relatedness; Friendship quality predicted competence; Peer acceptance predicted autonomy, competence and relatedness; Coach-athlete and autonomy, competence and relatedness predicted self-determined motivation; Friendship quality and competence predicted self-determined motivation;	Psycs Ant → SDM Psycs Ant → SDM Psycs Ant → Psyc Ant Psycs Ant → Psyc Ant Psycs Ant → SDM Psycs Ant and Psyc Ant → SDM Psycs Ant and Psyc Ant → SDM
#10	Mouratidis, & Michou (2011)	Positive relation to competence and personal standards; Positive relation to contextual autonomous motivation and personal standards; Positive relation to contextual controlled motivation and personal standards; Controlled motivation was positively associated with concerns over mistakes; Contextual autonomous motivation was positively associated with situational self-determined motivation; Self-determined motivation was positively associated with daily effort.	Psyc Ant → IPF Co Au M → IPF Co Co M → IPF Co Co M → IPF Co Au M → SDM SDM → B Co
#11	Moreno-Murcia & Marín (2011)	Task peer motivational climate positively predicted intrinsic motivation; Intrinsic motivation negatively predicted the fear of performance error.	Psycs Ant → In M In M → - Er P Co
#12	Wang, Koh, & Chatzisarantis (2009)	Positive leadership had higher autonomy, relatedness, and competence compared to the athletes from the Negative leadership; Positive leadership had higher autonomous regulation compared to those in the Negative leadership.	Psycs Ant → Psyc Ant Psycs Ant → Au Reg
#13	Balbinott, Saldanha, & Balbinotti (2009)	Boys and girls young basketball athletes were more motivated by pleasure.	In M

N°	Study	Keys findings	Thematic analysis
#14	Blanchard, Mask, Vallerand, Sablonniére, & Provencher (2007)	Negative relation between team performance (A.G. 1) and situational motivation (A.G. 2);	Te P Co (A.G. 1) → - IPF Co (A.G. 2)
		Self-determined motivation (before the tournament) predicted situational motivation (A.G. 1);	SDM (BT) → IPF Co (A.G. 1)
		Self-determined motivation (A.G. 1) predicted situational motivation (A.G. 2);	SDM (A.G. 1) → IPF Co (A.G. 2)
		Situational motivation (A.G. 1) predict self-determined motivation (A.G. 1);	IPF Co (A.G. 1) → SDM (A.G. 1)
		Situational motivation (A.G. 2) predicted self-determined motivation (ten days following the tournament);	IPF Co (A.G. 2) → SDM (10 FT)
		Personal performance was positively linked to situational motivation (A. G. 1 and 2).	Pe P Co → IPF Co (A. G. 1 and 2).
		Team performance were positively linked to situational motivation (A. G. 1 and 2).	Te P Co → IPF Co (A. G. 1 and 2).

Note: Psyc Ant: Psychological Antecedents; SDM: Self-determined Motivation; E Co: Emotional Consequence; B Co: Behavior Consequence; Au M: Autonomous motivation; Co M: Controlled Motivation; Psycs Ant: Psychosocial Antecedents; Id R: Identified Regulation; Ex R: External Regulation; AM: Amotivation; In M: Intrinsic Motivation; EPF Co: External Psychosocial Consequence; FPF Co: Future Perspective Factors; Ex R: External Regulation; P Co: Performance Consequence; IPF Co: Internal Psychological Factors; Au Reg: Autonomous regulation; Te P: Pe P: Personal Performance; Team Performance; A.G.: After Game; BT: Before the Tournament.

Discussion.

Psychosocial Antecedents Associated with Young Basketball Athletes' Self-Determined Motivation

The psychosocial antecedent factor most associated with self-determined motivation was the influence of coaches. The coach-athlete relationship predicted self-determined motivation and the satisfaction of BPNs (Riley & Smith, 2011). High task-oriented and caring coach climates were associated with intrinsic motivation (Iwasaki & Fry, 2013). Likewise, the positive leadership of coaches as well as a coach motivational climate (Sánchez-Oliva et al., 2012) were associated with higher autonomous regulation and higher satisfaction of athletes' BPNs (Wang et al., 2009). Finally, verbal aggression of coaches had a negative impact on intrinsic motivation and identified regulation but had a positive impact on external regulation and amotivation (Alexandra, Stefanos, & Vassilis, 2015).

The coach-athlete relationship model (Mageau & Vallerand, 2003) argues that coaches' behaviors in terms of autonomy-supporting behaviors have a beneficial impact on athletes' needs for autonomy, competence, and relatedness. Thus, an autonomy-supporting interpersonal style can enhance athletes' self-determined motivation because it contributes to the satisfaction of their psychological needs (Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2009). The studies investigated the coach motivational climate (Sánchez-Oliva et al., 2012) and the coach-athlete relationship (Riley & Smith, 2011) as they related to BPNs and found that both predicted positive outcomes. However, no study investigued the effect of coaches' interpersonal style (i.e., autonomy-supportive or controlling) on the self-determined motivation in young basketball athletes.

Task peer motivational climate and acceptance (Riley & Smith, 2011) was predictor of positive impacts on BPNs (Sánchez-Oliva et al., 2012) and intrinsic motivation (Moreno-Murcia & Marín, 2011). Parental motivation climate was investigated in only one study, predicting autonomy and competence (Sánchez-Oliva et al., 2012). Task motivational climates from parents and peers are also essential for young athletes' continued participation in sports (Atkins, Johnson, Force, & Petrie, 2015).

In other studies, psychosocial antecedents were predictors of consequences for young basketball athletes, such as a future desire to participate in basketball camp (Iwasaki & Fry, 2013) and an intention to be physically active (Almagro & Conde, 2012).

On the basis of these findings, coaches may promote a task motivational climate, emphasizing mastery and self-comparison. It is also recommended that coaches avoid verbal aggression and exercise positive leadership with democratic behavior, social support, and positive feedback. Moreover, it is important for the coach to support competence, autonomy, and relatedness between peers. It is recommended that coaches identify and monitor emotional and behavior variables. In applied perspective, Mageau & Vallerand (2003) suggest various autonomy-supporting behaviors for coaches, such as providing choices, a rationale for tasks, limits, and opportunities to take initiative and work independently.

Psychological Antecedents Associated with Young Basketball Athletes' Self-Determined Motivation

The three BPNs, autonomy, competence, and relatedness, predicted self-determined motivation in young basketball athletes (Riley & Smith, 2011). Autonomy and competence predicted intrinsic motivation (Sánchez et al., 2012). These psychological antecedents were predictors of consequence behaviors such as respect for opponents, respect for rules (Pulido, Sánchez-Miguel, Leo, Sánchez-Oliva, & Amado, 2013), and increased effort in training (Mouratidis & Lens, 2015). Likewise, competence perception was a predictor of emotional consequences such as enjoyment, vitality (Mouratidis & Lens, 2015), and a flow state (Coterón, Sampedro, Franco, Pérez-Tejero, & Refoyo, 2013).

BPN satisfaction results in several positive consequences. Autonomy satisfaction leads to a feeling of ownership of one's behavior, producing desired outcomes; to experience mastery and effectiveness and to feel that one can relate to others and with the social world in general are important in themselves. If all three needs are satisfied, intrinsic motivation will increase (Wang et al., 2009). Likewise, this will increase effort, enjoyment, and commitment in the practice of basketball.

Consequences of Young Basketball Athletes' Self-Determined Motivation

Young basketball athletes with self-determined motivation feel more enjoyment, vitality, and desire to increase effort during practice (Mouratidis & Lens, 2015), situational motivation (Blanchard, Mask, Vallerand, Sablonniére, & Provencher, 2007) and intrinsic motivation increased commitment (Sánchez-Oliva et al., 2012) and negatively predicted the fear of performance error (Moreno-Murcia & Marín, 2011), whereas autonomous motivation was positively related to personal standards (Mouratidis, & Michou, 2011).

Underlying Theoretical Frameworks Related to Young Basketball Athletes' Self-Determined Motivation

The construct of SDT has underlying theoretical frameworks that define more autonomous motivation or more controlled motivation. Autonomous motivation was predicted to lead to increased effort in practice (Mouratidis & Lens, 2015) and high personal standards for young basketball athletes (Mouratidis, & Michou, 2011), whereas controlled motivation was negatively associated with enjoyment (Mouratidis & Lens, 2015), a decrease in tasks, an increase in ego-oriented perceptions of success (Gómez-López, Granero-Gallegos, Abraldes, & Rodríguez-Suárez, 2013), and concerns over mistakes (Mouratidis & Michou, 2011).

Instruments Used to Evaluate Self-Determined Motivation

The instruments most often used by the selected studies were the Intrinsic Motivation Inventory and Sport Motivation Scale. These two instruments assess the motivation of athletes. The theory framework underpins the construction of the SMS is SDT, and it evaluates different types of motivation: IM, EM, and amotivation. The instrument comprises 28 items, measured by a seven-point Likert scale ranging from 1 (nothing corresponds) to 7 (corresponds exactly) in response to the phrase "I participate in and I strive to practice sports." It was formulated in French (Vallerand et al., 1989) and was translated into English (Pelletier et al., 1995). Currently, it is one of the most commonly used instruments to identify the reasons for sports practice (Yamaji, Bernardes, & Guedes, 2015). It has been validated for Portuguese (Bara Filho et al., 2011; Da Costa et al., 2011).

Limitations

Regarding the limitations of this systematic review, experimental studies were not found in the search in electronic database and qualitative studies were not analyzed. Another limitation was that studies not analyzed the self-determined motivation in basketball coaches.

Conclusions and Future studies

In conclusion, the conceptual map can help coaches promote self-determined motivation in athletes by showing how it impacts emotional and behavioral factors. Additionally, it can indicate future directions for study. The coach motivational climate was the main psychosocial factor associated with young basketball athletes' self-determined motivation. The psychological antecedents were BPN satisfaction of autonomy, competence, and relatedness. The main consequences of young basketball athletes' self-determined motivation were related to performance, internal psychological factors, emotions, behavior, and future prospective factors. Most of the studies used an underlying theoretical framework in the research.

The IMI and SMS are instruments used to analyze self-determined motivation can identify different types of motivation and to indicate the level that athletes meet. These instruments have been used and validated in different languages, which demonstrates researchers' interest in analyzing self-determined motivation.

In regard to future direction for studies, these results suggest that additional studies into the influence of peer and parental motivational climates in young basketball athletes' self-determined motivation are needed.

Additionally, an experimental approach should be taken to investigate the effect of coaches' interpersonal style (i.e., autonomy-supportive or controlling) on young basketball athletes' self-determined motivation as well as emotional and behavioral outcomes like enjoyment and effort. Still, we suggest longitudinal design studies to verify the changes in motivation over time and a comparison of young basketball athletes with young athletes of other sports or youth who do not participate in competitive sports to verify the effects of sports participation on mental health, for example.

Finally, in applied terms, coaches should provide a task motivational climate and autonomy-supporting behavior to promote the satisfaction of competence, autonomy, and relatedness, allowing the athlete a greater perception of success, enjoyment in the practice, and the desire to increase effort and commitment. In this way, young athletes will be encouraged to remain actively engaged in basketball and will intend to participate in the sport in the future.

Factors Associated with Self-Determined Motivation in Young Basketball Athletes: A Systematic Review

Resumo

O presente estudo teve como objetivo analisar os fatores psicológicos e psicossociais associados à motivação autodeterminada de jovens atletas de basquete, através de uma revisão sistemática. Após a busca, 377 artigos foram identificados a partir de uma revisão sistemática seguindo a declaração PRISMA em bases de dados eletrônicos (Web of Science, PubMed, Science Direct, SportDiscus, PsyInfo, Scopus e Scielo). Foram incluídos apenas artigos originais revisado por pares publicados nos idiomas inglês, espanhol ou português, com foco em jovens atletas de basquete e motivação autodeterminada. Quatorze estudos foram incluídos na síntese qualitativa. Esses estudos investigaram 3.396 jovens atletas de basquete e 37 fatores psicológicos e psicossociais associados à sua motivação autodeterminada. O instrumento mais utilizado para analisar a motivação autodeterminada dos jovens atletas de basquete foram a Escala de Motivação Intrínseca e a Escala de Motivação Esportiva. Concluiu-se que o clima motivacional do treinador e as necessidades psicológicas básicas (NPB) foram os principais antecedentes psicossociais e psicológicos, respectivamente, associados à motivação autodeterminada dos jovens atletas de basquete, enquanto o aumento do esforço no treinamento foi a principal consequência associada à autodeterminação motivação.

Palavras-chave: motivação; teoria da autodeterminação; esportes coletivos; jovem; revisão.

Factors Associated with Self-Determined Motivation in Young Basketball Athletes: A Systematic Review

Abstract

The present study aimed to analyze the psychological and psychosocial factors associated with self-determined motivation of young basketball athletes through a systematic review. After search, 377 articles were identified from a systematic approach following the PRISMA statement via electronic databases (Web of Science, PubMed, Science Direct, SportDiscus, PsyInfo, Scopus, and Scielo). Only original peer-review articles published in the English, Spanish or Portuguese language focusing in young basketball athletes and investigated self-determined motivation were included. Fourteen studies were included in the qualitative synthesis. These studies investigated 3,396 young basketball athletes and 37 psychological and psychosocial factors associated with their self-determined motivation. The most used instrument to analyze the self-determined motivation of young basketball athletes were the Intrinsic Motivation Scale and Sports Motivation Scale. It was concluded that a coach motivational climate and basic psychological needs (BPNs) were the main psychosocial and psychological antecedents, respectively, associated with young basketball athletes' self-determined motivation, whereas increased effort in training was the main consequence associated with self-determined motivation.

Keywords: motivation; self-determination theory; team sports; young; review

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