

Enthusiasm vs. Reality: A Job Analysis of Chinese Sport Scientists

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Abstract

The aim of this study was to survey Chinese sport scientists to develop an understanding of their demographics, job characteristics, future career intentions, and opinions. This study adapted online survey and used convenience sampling to investigate the role of sport scientists across China. Ninety-seven practitioners across 18 provinces/municipalities participated in this study. Participants were typically married (70%), male (71%), aged between 30-39 (52%), and held a master's degree (66%). Most participants were employed full-time (90%) by sport science institutes (66%), with a wide salary range, long working hours (≈ 48 hr per week) and irregular working time (40%). Most participants remained at the same institute (85%) throughout their career. The most frequent reason why sport scientists remained in their current position was "*job enjoyment*" (4.04/5). The most frequently reported issue encountered by participants was "*opinion differences with sport coaches*" (21%). The ability to "gain trust" and "communication" were deemed important in the role of a sport scientist. Approximately half (44%) of the participants were satisfied with their current position and employer, while others wanted promotion (34%) or to leave their role (11%). The results revealed that (1) China's sport scientists are engaged in their current job mainly due to their enthusiasm, (2) their jobs are stable but highly demanding and relatively low paid. Poor working conditions and low retention are evident across Chinese sport scientist roles. Governing bodies should make efforts to improve the work conditions to improve the sustainability of sport scientist roles in the Chinese sport industry.

Keywords: career, burnout, demographics, performance, multidisciplinary team

Introduction

Sport science is a multidisciplinary field concerned with understanding and enhancing sports performance.^{1, 2} Sport scientists are often specialists (e.g., biomechanics, physiology, etc.) and possess a strong general understanding of other support specialties.³ Sport scientists must apply their knowledge and skills to the athlete and their training process, to obtain and analyze information, evaluate processes, and problem-solve.² To achieve this, a strong relationship is required with athletes and the wider support team. Therefore, translating complex methods and information into an understandable and useable format is an essential skill to master.⁴

Sport scientists have received growing interest and recognition, leading to an increased prevalence in high-performance sports.⁴ For example, the National Strength and Conditioning Association established the Certified Performance and Sport Scientist (CPSS) accreditation in 2021.⁵ Furthermore, researchers have recently tried to define and explain the profession, role, skills, and employment opportunities of '*sport scientists*' more explicitly.^{2, 3, 6} However, due to the demanding nature of sports, particularly at the elite level, there have been suggestions to cultivate a new generation of sport scientists⁷ and pursue a more sustainable work-life balance.⁸

Research into the job characteristics, responsibilities, and perceptions of sport scientists can further support the career planning of current practitioners and workforce planning by policy makers, industry leaders, and managers.^{9, 10} Prior research on sport practitioners has mainly focused on sub-disciplines (e.g., strength and conditioning [S&C]). For example, the efforts made in the United States of America (USA) to

formalize the profession of S&C and establishment of standards to obtain certifications have contributed to the growth of the S&C industry.^{9, 11, 12} This has, in part, been achieved through researching the job characteristics¹³⁻¹⁶ and opinions of S&C coaches.^{17, 18} Consequently, these studies have helped to ensure the continued development of the S&C industry in many aspects (e.g., recruitment, professional development, policy establishment). Because discussion in the literature has helped the S&C profession evolve, similar discussion is required to formalize sport scientist roles.

To promote the regulation and development of sport science, Exercise and Sports Science Australia (ESSA) commissioned and published the first national workforce survey of sport scientists in 2013.¹⁹ The results identified issues including under-representation of females in the workforce, poor job security, and long working hours. Because many sport scientists may begin their careers as S&C coaches, or develop with concurrent duties, the available research on the S&C workforce may help explain issues across the sport scientist workforce (e.g., poor diversity). Furthermore, research on scientists across other professions (e.g., medicine) has highlighted that burnout, stress, and depression are common.^{20, 21} This may be related to the characteristics of science-based professions, because science often attracts curious and hard-working people who wish to solve important questions; however, many questions in science are never fully answered and the finish line is often not easily defined.²¹ In turn, this may negatively affect the welfare, quality of life, career development, and career choices. Managers can seek to design roles so that work volume does not consistently overshadow quality of life for sport scientists, which may improve job performance, health, and employee

retention.^{3, 19} Therefore, such considerations should be taken into account when discussing the sustainable development of sport scientist roles within the sport industry.

Although some understanding of the demographic information, roles, and perceptions of sport scientists is known, this is only within certain countries (e.g., Australia) and requires updating given the rapidly evolving field;¹⁹ Investigations in one country may not reflect the state of the profession in another. Therefore, investigating the demographic and job characteristics of current sport scientists in China will help (1) update and deepen our understanding of sport science jobs (2) provide a comparative scale for future study (3) provide recommendations for sustainable development of sport scientist roles in China. Since the 2008 Olympic Games, China has made impressive progress in high-performance sports, with sport science playing an integral role in driving this development. Therefore, the aim of this study was to survey Chinese sport scientists to develop an understanding of their demographics, job characteristics, future career intentions, and opinions. The research questions of the present study were:

- (1) What are the demographic characteristics of Chinese sport scientists in terms of marital status, gender, and educational background?
- (2) What are the main types of employment institutions for sport scientists in China, and what are their working conditions in terms of hours and salary?
- (3) What are the future career plans of Chinese sports scientists and, what are the perceptions and opinions of Chinese sports scientists on their job?

Methods

Experimental Approach to the Problem

A cross-sectional explorative study was designed to survey China's sport scientist to ascertain their demographics, job characteristics, future career intentions, and opinions. To target the relevant population, this study adopted convenience sampling.

Participants

The inclusion criteria for participants were: (1) consent to participate in research (2) ≥ 18 years of age, (3) currently engaged in paid or volunteer work in the sport industry for at least three months, and (4) currently serve in a sport scientist role focused on improving performance of athletes or sport teams. Sport scientists were targeted from high-performance sports teams, sports training bases, sport governing bodies, universities, sport science institutes, private performance companies. The author emailed the survey to sport institute directors and recruited participants via a social media platform (WeChat, Tencent, China). The social media platform was used to distribute a link to an online survey. The survey was adapted from prior research in high-performance Chinese sports²² and fitness trends.²³ In total, 109 participants completed the survey, which took ≈ 22 minutes. The lead author pre-checked all responses, and 12 responses (11%) were considered invalid due to participants not meeting the inclusion criteria. Consequently, survey responses from 97 sport scientists were included in this study, with demographic information presented in Table 1.

Responses were received from 18 provinces/municipalities, with the most reported being Shanghai ($n=19$; 20%), Guangdong ($n=13$; 13%), and Guizhou ($n=19$; 13%). Approval for conducting the study was secured from the Ethics Committee of the Shanghai University of Sport (number of approval: 102772023RT056).

Insert Table 1 About Here

Survey Administration

Open access survey administration application WJX web platform (WENJUANXING, www.wjx.cn) was used to construct and distribute the survey and to collect and analyze responses. The survey was adapted from prior research investigating the demographic and job characteristics of sport scientists and S&C coaches^{9, 19, 24} and translated into Chinese. The survey consisted of 44 questions (42 fixed responses and 2 open-ended) and four sections (1) screening questions, (2) demographic information, (3) current job information, and (4) future career intentions. Some questions allowed multiple responses to be selected; therefore, some questions had more responses than others. The survey's content validity was evaluated by the corresponding author, another researcher with extensive experience in survey design, and three sport scientists through pilot testing before being finalized. Pilot testing led to slight modifications to the wording and structure of the survey to ensure its suitability to the targeted audience. Data collection was conducted from 31 May 2023 to 12 June 2023.

Statistical Analyses

All analyses were performed using SPSS 27.0 (IBM Corp., Armonk NY). Continuous variables were presented in mean and standard deviation, and categorical variables were reported as frequencies (%). Shapiro-Wilk test was used to check data normality, and researchers used t-tests to analyze differences in working hours between genders and career intentions. To exploring the differences among institutions, the Chi-square test was used to identify differences between genders, highest degrees, future intentions and age, with effect size is reported as the Phi coefficient. A one-way ANOVA was used to analyze the differences in working hours between institutions. Significance was accepted at $p < 0.05$. A six-stage thematic analysis²⁵ approach was used to assess open-ended questions that included: (a) familiarization with the data, (b) generating initial codes, (c) searching for themes, (d) reviewing themes, (e) defining and naming themes, and (f) producing the report. This method has been previously used by studies surveying S&C coaches.^{26, 27} Using this approach, clear and identifiable themes representing the main ideas or patterns emerging from the raw data were generated for each of the open-ended questions.

Results

Demographic information

The participants were mainly males (71%, Table 1). About half (52%) of participants were 30-39 years of age, with only a small proportion of participants over the age of 50

years (9%). Participants working in sport science institutes, universities, and other were older than those working in sport governing bodies and sports teams (Phi coefficient = 0.661, $p < 0.001$). Most of participants were married (70%). A Master's degree (66%) was most commonly held highest degree. The most common major of their highest degree was "physical education and athletic performance" (41%).

Job Information

The employment status of most participants was full-time work (90%). Sport science institutes employed 66% of the total number of survey participants (Table 2). Most of the participants reported 0-10 years of experience in the industry (62%), primarily at their current institution (59%). Most participants reported that they had never changed (85%) institutions during their career as a sport scientist, while others changed jobs 1 (9%), 2 (4%), and 3 (2%) times. There was a large range of salaries amongst participants, with nearly one-third (36%) earning between 72,001-108,000 RMB per year before tax. The range of salaries was different between institutions (Phi coefficient = 0.818, $p < 0.001$) and highest degrees (Phi coefficient = 0.550, $p = 0.009$), and was not different between genders (Phi coefficient = 0.347, $p = 0.112$). Participants reported the academic level required for their position was a master's degree (69%), Ph.D. (14%), bachelor's degree (11%), or none required (4%). Eighty-six percent of participants reported that their work required them to be directly involved in the sports team. Participants worked an average of 48 hours per week. Males worked more hours on average than females (51 ± 18 vs 41 ± 19 hours, $p = 0.014$) and those in sport governing bodies worked more hours on average than those in universities (67 ± 18 vs 41 ± 15 hours, $p = 0.034$).

Participants worked mainly during typical business hours (60%), followed by early mornings/late evenings (20%), and weekends (20%). The working hours of participants were distributed across coaching activities or servicing in athletes/teams (41%), research (17%), non-research office work (10%), management of athletes or support staff (8%), other (8%), meetings (6%), teaching courses (5%), professional development (4%). The perceived importance of knowledge, skill, and qualities for their position are presented in Figure 1. Most (92%) sport scientists worked collaboratively, and the perceived frequency of cooperation between sport scientists and members in different fields is presented in Figure 2. Sport scientists were most satisfied with their job itself (4.38/5), followed by work content (4.26/5), people they work with (4.22/5), their workplace (4.04/5), rules and regulations of work (3.69/5), working hours (3.68/5) and working volume (3.62/5). The factors why participants engaged in their current position are presented in Figure 3. The percentage of responses to each theme and exemplar responses for the biggest issues faced and modifications they would make are provided in Tables 3 – 4.

Insert Tables 2 – 4 About Here

Insert Figures 1 – 3 About Here

Future career intentions

Most (89%) practitioners wanted to stay at their current institution (Figure 4).

Participants who worked more hours were more likely to want to leave their jobs (59 ±

23 vs 47 ± 20, $p = 0.038$). Salaries were not different between those wanting to leave their jobs and those seeking to remain (Phi coefficient = 0.233, $p = 0.630$). The factors as to why they would consider leaving their position are presented in Figure 5. Respondents reported that they would like to remain in a sport scientist role for 20 years (56%), 1-5 years (12%), 11-15 years (12%), 6-10 years (10%), 16-20 years (8%), and ≤1 year (2%). Most participants sought to end their career in the form of retirement (62%), to pursue further education (23%), career change (11%), and others (4%).

Insert Figures 4 & 5 About Here

Discussion

The purpose of this study was to survey Chinese sport scientists to gain insights into their demographic information, job characteristics, future career intentions, and opinions on work conditions. Our findings revealed that Chinese sport scientists are predominantly male, aged between 30-39, with a master's degree in a human performance-related field. They are employed full-time by sport science institutes, required to use diverse knowledge and skills, and work long and irregular hours. While they expressed job satisfaction, salary dissatisfaction and concerns about opinion differences with sport coaches and athletes were noted. These findings can be used by organizations to guide future employment and policy adjustment in China, and globally by international communities to understand and compare the demographics, job information, and future career intentions of sport scientists in China.

Poor gender diversity was observed in this survey, as 71% of respondents were male. Previous research in S&C shows that female S&C coaches perceive a number of gender-related disadvantages (e.g., less chance of promotion, lack of respect, inability to work with male teams, pay inequity, being undervalued, and being subject to sexism).¹⁸ After a sustained focus and effort to take steps to rectify this problem,^{14, 18, 28} data has shown that female S&C coaches now occupy 32–35% of paid positions at the collegiate-level.¹⁸

The majority (66%) of sport scientists in this study held a master's degree in a human performance related field (77%), which is in line with employer' requirements for academic qualifications (69% of employers required a master's degree) reported by participants. Following a formal pathway has been recommended to prepare sport scientists with the requisite scientific knowledge to perform their work.²

Given that most participants had spent ≤ 5 years in sport scientist roles and few were ≥ 50 years of age, this may indicate retention problems for sport scientists working in China. The cause of this may be multifactorial, but may be attributed to low salaries, long working hours, irregular working time, and negative perceptions of the job (such as dissatisfaction with work volume). One survey showed a high rate of burnout, stress and depression among scientists.²¹ This also may explain why there were fewer senior personnel in this sample. Recent publications have emphasized the importance of work-life balance as a sport scientist⁸ and suggested that talented sport scientists may burn out and quit before reaching their full potential. Maintaining a sustainable work-life balance may be important not only for achieving consistently better long-term results,

but also to ensure a higher quality of life and the development of a robust mental resilience. When highly-skilled and knowledgeable personnel leave their positions, some complex training-related problems may not be solved, especially if the burden falls on less experienced practitioners. In addition, turnover may reduce available senior personnel to develop new employees in the workforce. This shortage of qualified sport scientists ultimately reduces awareness of the value of the role in organizations and reduces influence on training processes of current athletes. Subsequently, losing highly-skilled and knowledgeable personnel will be detrimental to organizations and industry, limiting the organization's ability to operate in a competitive environment and improve the performance of athletes.¹⁹ Managers and organizational leaders may positively influence the career field by improving work hours, increasing salaries, promotion opportunities and respect for sport scientists. This may improve retention and reduce burnout, stress, and other issues in the field.

Chinese sport scientists worked an average of 48 hours per week, more than those reported in Australia.²⁹ This exceeds China's labor law limits of 44 hours per week on average and 8 hours per day,³⁰ similar in principle to labor laws in other countries. Sport scientists reported working hours as the most unsatisfactory variable in their jobs. Forty percent of their typical weekly working hours were distributed at early mornings/late evenings or weekends, because their job usually (86%) required them to be directly involved in the sports team (i.e., working alongside athletes in training). While some irregular working hours can be flexibly scheduled, (e.g., writing reports or research articles), other tasks require fixed time commitments (e.g., 2 days supporting athletes

in a competition). Fixed time commitments are often a major factor influencing work hours. Sport scientists rated work volume as second-highest problem area in their jobs. However, in sport scientist roles, these working conditions are necessary at times (e.g., during pre-competition preparation, long-distance travel for competition, and facilitating recovery for the athletes after training and competition).

Sport scientist reported their most common task was direct coaching and servicing athletes and teams (41%), supporting the idea that the main goal of their work is to improve athlete performance. The way they achieve this goal is mainly through cooperating with sport coaches to solve issues that occur in their field and provide some guidance. However, due to the different responsibilities and perspectives of sport scientists and sport coaches, some suggestions provided by sport scientists may not be accepted by sport coaches. Sport coaches need to influence all things related to athletic performance, rather than a certain part (e.g., biomechanical aspect). Opinion differences and communication challenges between coaches and sport scientists were the most frequently reported issues (Table 3). One sport scientist related, “coaches and athletes think they know everything, when we provided suggestions, they did not adapt.” Correspondingly, two of the five most important knowledge, skills and qualities perceived by sport scientists were “Gain the trust of athletes and teams” and “Communication skills in both written and oral form”. This reflects the fact that the application of scientific results in practice does not always seem to be made a priority by coaches, which has been suggested in past publications.³¹ The sport coach is often the leader in sports teams because of their intricate understanding of the sport and often

rely on their own experience and intuition in improving the performance of athletes. Sport scientists provide corresponding guidance and knowledge translation for the team through evidence from scientific literature and internal research projects, which help coaches arrange training and guidance in a targeted manner, especially at the elite level. Consequently, effective communication between coaches and sport scientists is very important, because when communication is strained, coaches will guide athletes based on their experience and intuition, ignoring monitoring data. Informal courses featuring case studies of elite athletes may be helpful to increase sport coaches' knowledge of effective sport science methods. We also suggest sport scientists use contemporary coaching terms and focus on topics of concern to coaches. According to our experience, only those very experienced sport scientists in China can easily communicate and influence sport coaches, because they have successfully helped many coaches solve problems and helped athletes achieve success in major competitions.

The pre-tax annual salary range of sport scientist was large, from <36,000 RMB to >216,000 RMB, with most salaries falling between 72001 - 108,000 RMB (37%) (\approx 10,227 - 15,050 USD). In 2022 the National Bureau of Statistics reported the average annual salary of non-private employees in Chinese cities and towns was 114,029 RMB. The average annual salary of sport industry practitioners was 121,151 RMB.³² Given that 61% of sport scientists in this study earned less than or equal to 108,000 RMB annually, their average salary was slightly lower than the average salary of the Chinese sport industry. Previous surveys indicate salaries of Chinese S&C coaches were mostly < 120,000 RMB (74%),³³ which is substantially less than their counterparts overseas.

In 2022, S&C coaches in the USA reported earning an average of 60,527-80,575 USD per year (60,500 USD \approx 430,000 RMB).³⁴ In 2023, Canadian S&C coaches also reported greater earnings (87% earned > 30,000 CAD, \approx 159,000 RMB).³⁵ However, it should be noted that it is challenging to assess salaries given the different living costs in certain countries. Anecdotally, Western sport scientists invited to work in China are often paid substantially more than Chinese sport scientists. Participants reported the most desirable change to their current job was a pay increase (Table 4). The present study did not find obvious salary differences between job titles, but found salaries tended to be higher with higher academic degrees. Sport scientists with doctoral degrees earned the highest salaries, followed by those with master's, and bachelor's degrees, respectively. This may be because most of the sport science jobs were provided by the sport science institutes (66%) and universities (16%). Institutions that focus on research may offer higher salaries, but these positions usually require employees to have a Ph.D., research skills, and experience. Therefore, higher degrees that prepare sport scientists for faculty roles may lead to higher level roles and salaries. In addition, other aspects may also be factors that lead to higher level roles and salaries, such as the ability to promote the translation of scientific knowledge into practice, and better job performance.

For future career intentions, it appears that most practitioners wanted to stay at their current institution (44% were satisfied with their current position and/or employer; 34% wanted to be promoted in their current institution). This shows that although employees expressed some dissatisfaction with their current jobs, most of them did not intend to

leave their jobs. Of note, 11% of sport scientists wanted to leave their job, which is a considerable burden for employers who will not only be losing expertise, but also have to go through the process of recruitment and integration of new staff members. Turnover may reduce productivity and continuity of sport science operations for the organization. Experienced sport scientists are necessary to provide high-level service. A workforce with less experienced professionals is typically less capable. Because of this, the sport scientist workforce ideally has some balance between experienced and younger professionals so that knowledge can be transferred to the younger generation of professionals effectively, driving common practices forward. Further research may explore what an optimal age ratio of experienced and inexperienced practitioners might be that could accelerate development of the workforce. Of the 11 people who wanted to leave their job, 5 were married, 5 were >35 years old, they worked an average of 59 hours per week, and 7 of them earned 72,001 to 108,000 RMB or less. This indicates that they seem to have worse working conditions than most sport scientists and were under more stress. The most common reasons as to why these sport scientists would consider leaving their jobs were: lack of recognition, to achieve a higher salary, and the work content was not suitable (Figure 5). The present study showed most sport scientists (85%) had never changed their employer during their career, indicating that jobs in this field were stable. In addition, survey results indicate sport scientists tolerated lower salaries because they enjoyed their jobs. Due to the demanding work conditions reported by respondents, apparent stability of sport science jobs in China appears to be unsustainable. The workforce is primarily younger professionals. Leaders

and managers in the Chinese sport industry are encouraged to establish more family-friendly opportunities for the sport scientist workforce, particularly as employees gain seniority. This may enable better employee retention and sustainable growth.

Limitations

This study has three main limitations. First, a long response time (≈ 22 minutes on average), may have reduced the completion rate and reduced responses to non-required questions. For example, some participants did not answer the two open-ended questions that were not required. Second, not all participants answered the two open-ended questions. Therefore, data will only be representative of those that answered the questions. Third, there are 34 provinces/municipalities in China, and the types of institutions in which sport scientists work are diverse. Because convenience sampling was used, not all sport scientists are represented in the sample. Therefore, results contain some potential for bias and reduced generalizability to the workforce.

Conclusion

This study found that there may be a sustainability crisis in China's sport science workforce. China's sport science jobs were stable but demanding, and offered low salaries compared to industry averages. Most sport scientists reported enthusiasm for work as the reason for remaining in their current job. Long and irregular working hours, unsatisfactory salaries, and lack of recognition were deterrents from continuing their

careers. Similar conditions were reported in Australia in 2013, indicating that this may be a common issue internationally. Sport industry leaders and policy-makers are encouraged to improve working conditions and salaries for Chinese sport scientists to establish sustainability of sport science roles across the spectrum of career experience. This will ensure that the sport industry will be supported by a high-quality sport scientist workforce that can positively influence athletes and coaches.

Future research directions

Future research should deliver similar surveys in other countries to elucidate status of sport scientists elsewhere. In addition, it is necessary to further explore impact of specific job factors on job satisfaction of sport scientists. Results of studies exploring potential interventions to improve job satisfaction and retention of sport scientists may help sport industry leaders to design impactful policies. Studies should recruit a complete or representative sample to prevent selection bias. Given the possible differences in the definition of sport scientist in different countries, researchers must report as much detail as possible about the inclusion criteria and background information of participants.

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Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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Supplementary material

Supplementary material 1: Chinese **sport** scientists job survey

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Figure Caption

Figure 1. Importance of knowledge, skills, and qualities for their job position as perceived by sport scientists (mean score) ($n=97$).

Note: 1 = not important, 2 = slightly important, 3 = moderately important, 4 = important, 5 = very important; CADA=China Anti-Doping Agency; WADA=World Anti-Doping Agency

Figure 2. The frequency of cooperation with sports team members in different fields perceived by sport scientists (mean score) ($n=97$).

Note: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always

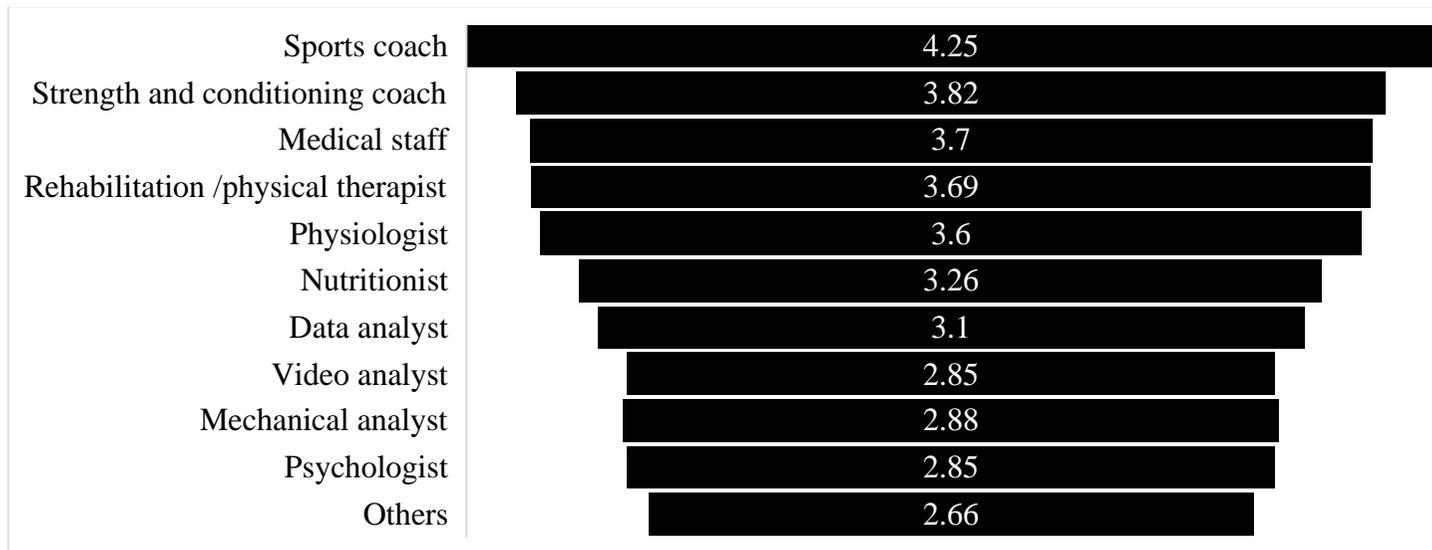
Figure 3. Perception of sport scientists as to why they are in their current position (mean of score) ($n=97$).

Note: 1 = not appropriate, 2 = slightly appropriate, 3 = moderately appropriate, 4 = appropriate, 5 = very appropriate

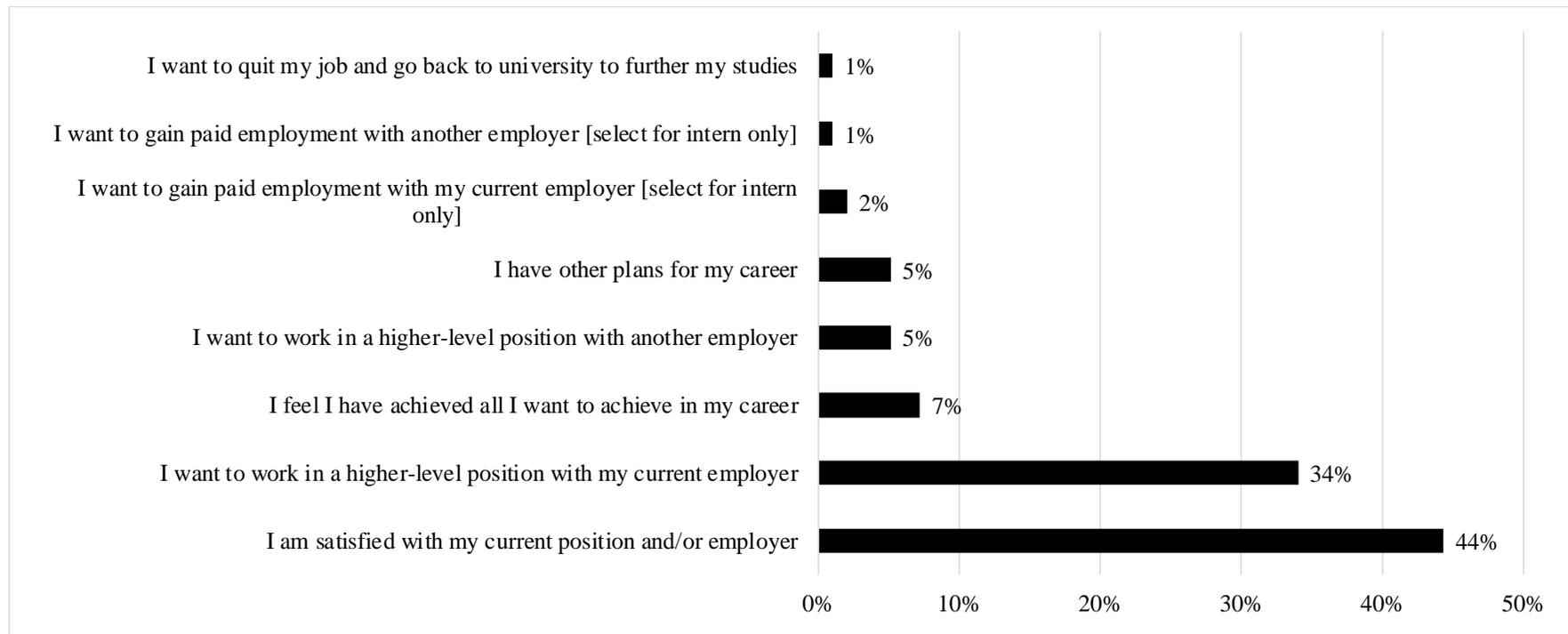
Figure 4. Future career intentions of sport scientists ($n=97$).

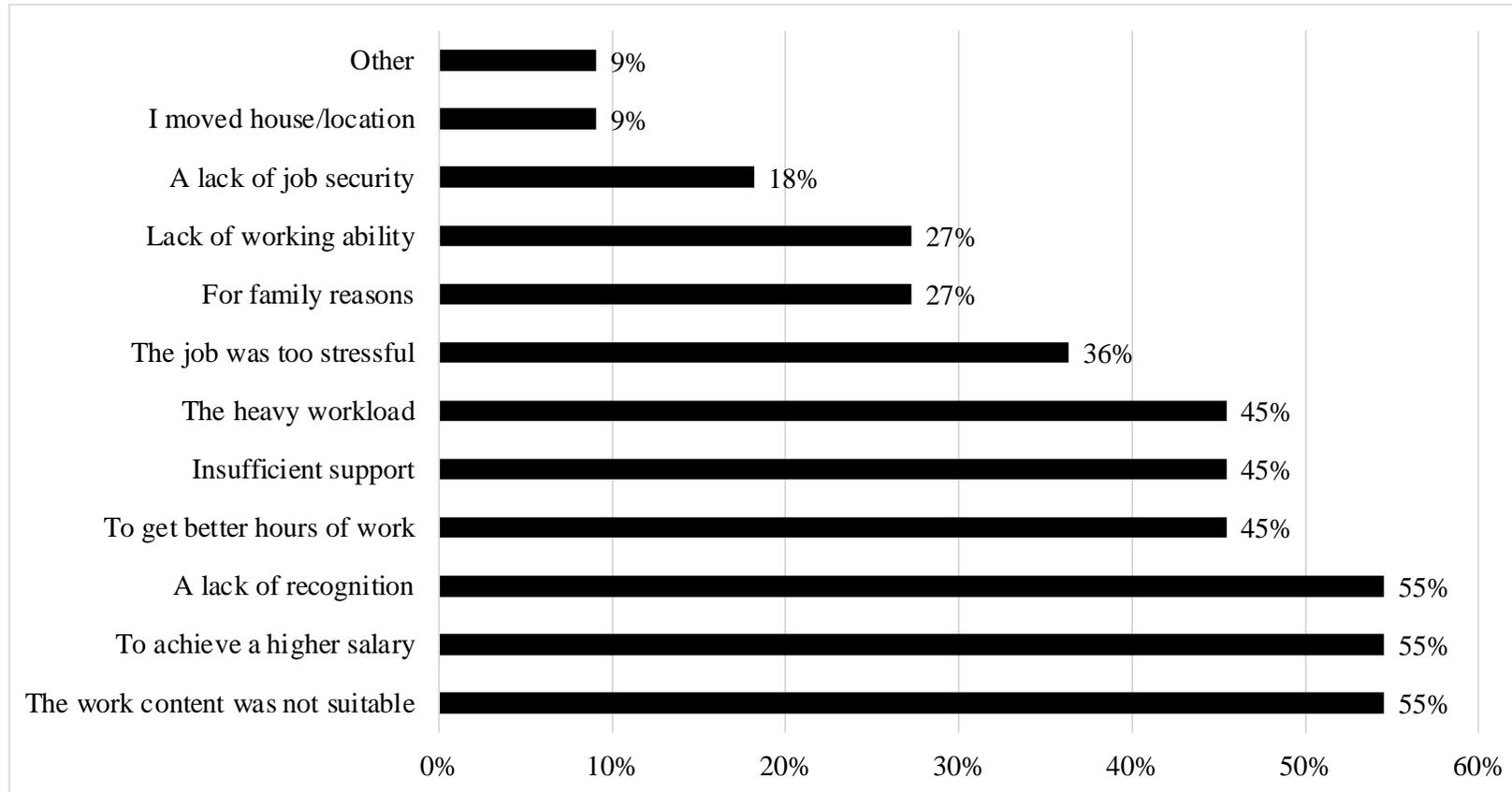
Figure 5. Reasons as to why sport scientists would consider leaving their job ($n=11$).

Sense of responsibility	4.72
Gain the trust of athletes and teams	4.7
Concentration	4.65
Communication skills in both written and oral form	4.46
Knowledge of the CADA or WADA code	4.46
Ethical practices in sport science	4.46
Process and analyze data	4.37
The capacity to obey the orders or assignments from superiors	4.37
Stress management	4.37
Monitoring of athlete training responses and training load	4.36
Report presentation and data visualization	4.35
Ability to write reports, papers, and summaries	4.33
Adapt to new environments quickly	4.33
Identify and ask training related scientific questions	4.32
Interdisciplinary collaboration and decision making	4.31
Assessment of fitness components	4.28
Knowledge of contemporary sport specific research and best practice	4.27
Search and read research literature	4.24
Interpret and evaluate scientific research	4.22
Curiosity	4.16
Management of athletes and support staff	4.15
Design and conduct scientific research	4.14
Critical thinking	4.13
Quantitative measurement of sport demands	4.12
Athlete recovery practices	4.12
Leadership skills	4.11
Assessment of athletes' motor skills	4.03
Designing of training programs or interventions	4.03
Implementation of training programs or interventions	4.03
Selection, calibration, and operation of appropriate field and laboratory apparatus	3.98
Understanding of measurement error and methodology limitations	3.97
Provision of nutrition consultation or advice	3.9
Psychological counseling, analysis, and training	3.74



Because I enjoy this work very much	4.04
Because this job affords me a certain standard of living	3.8
Because it allows me to reach my life goals	3.77
Because this job fits my personal values	3.72
Because this job fulfils my career plans	3.54
Because this job gives me a lot of honor	3.13
Because this job is relatively easy	3.13
Because I can't find a better job for a while	2.65
Because it allows me to make a lot of money	2.37





Table

Table 1. Demographic information of sport scientists by institution.

Institution	Sport science institutes (<i>n</i> =64)	Universities (<i>n</i> =16)	Sport governing bodies (<i>n</i> =6)	Sports teams (<i>n</i> =6)	Other (<i>n</i> =5)	Total (<i>n</i> =97)
Gender (%) (<i>n</i> =97)						
Male	63	94	83	100	60	71
Female	38	6	17	0	40	29
Age (yrs) (%) (<i>n</i> =97)						
18-19	0	0	0	17	0	1
20-29	8	25	50	50	20	16
30-39	63	31	50	33	0	52
40-49	20	25	0	0	40	20
50-59	9	19	0	0	40	11

Marital status (%) (*n*=97)

Married	77	75	33	17	80	70
Single	20	25	67	83	20	28
Divorced	3	0	0	0	0	2

Highest degree obtained (%)

(*n*=97)

Ph.D.	5	69	17	0	20	16
Masters	78	31	67	33	60	66
Bachelors	17	0	17	67	20	18

Major learned during highest

degree (%) (*n*=97)

Physical education and athletic

performance

30	69	83	83	0	41
Medicine	13	0	0	0	8

Human kinesiology/Exercise science	41	25	17	17	40	35
Biology	5	0	0	0	0	3
Other	13	6	0	0	60	12

Table 2. Job employment, requirement, experience, and salary of sport scientists by institution.

Institution	Sport science institutes (<i>n</i> =64)	Universities (<i>n</i> =16)	Sport governing bodies (<i>n</i> =6)	Sports teams (<i>n</i> =6)	Other (<i>n</i> =5)	Total (<i>n</i> =97)
Employment status (%) (<i>n</i> =97)						
Employed, full time work	100	69	100	50	60	90
Employed, part time work	0	31	0	17	0	6
Not employed, internship	0	0	0	33	20	3
Not employed, other status	0	0	0	0	20	1
Your job required you to be directly involved in the sports team (%) (<i>n</i> =97)						
Yes	88	69	100	100	80	86
No	13	31	0	0	20	14

Years in sport scientist roles (yrs) (%) (*n*=97)

0-5	25	44	67	100	40	36
6-10	30	19	33	0	20	26
11-15	25	19	0	0	20	21
16-20	13	13	0	0	0	10
21-25	2	6	0	0	0	2
≥26	6	0	0	0	20	5

Years at current institution (yrs) (%) (*n*=97)

0-5	27	38	83	100	60	38
6-10	25	19	17	0	0	21
11-15	25	19	0	0	20	21
16-20	14	25	0	0	0	13
21-25	3	0	0	0	20	3
≥26	6	0	0	0	0	4

Annual pre-tax salary (%) (*n*=95)

≤36,000 RMB	0	25	0	33	20	7
36,000-72,000 RMB	22	13	0	0	0	16
72,001-108,000 RMB	47	6	67	0	0	36
108,001-144,000 RMB	25	31	17	33	40	27
144,001-180,000 RMB	5	6	17	17	20	7
180,001-216,000 RMB	2	13	0	0	0	3
>216,000 RMB	0	6	0	0	0	1

During the past month, have you been

thinking about leaving your job? (%) (*n*=97)

Yes	8	0	50	33	20	11
No	92	100	50	67	80	89

Table 3. Sport scientists ($n=52$) responses to the biggest issues faced when working in the sport scientist roles.

Rank	Theme	Exemplar responses	Percentage
1	Nothing	“Nothing”	26
2	Teamwork/ opinion differences	“Sports teams do not understand enough about scientific research work” and “coaches and athletes think they know everything, when we provided suggestions, they did not adapt”	21
3	Knowledge/ skill	“Data statistics skills are not good, affecting the in-depth understanding of training” and “I can’t improve myself regularly, and I can’t access the latest knowledge”	17
4	Miscellaneous	“There are not many researchers in related fields of communication and cooperation” and “embed into the work of the sports team will be a lot of pressure, many times the lack of a sense of accomplishment”	13
5	Recognition	“Coaches and athletes don’t recognize me enough” and “leaders don’t recognize me”	11
6	Fund	“There is no financial support for scientific research, human and material resources are not enough” and “financial security is difficult”	6

7	Practice	“It is difficult to directly apply existing scientific research results to improve athlete performance” and “there are too few effective, reliable and convenient measurement methods”	4
8	Time	“Too much work time” and “work and life balance, high-level sports teams work longer hours”	2

Table 4. Sport scientists ($n=51$) responses to changes or modifications they would make to their work given unlimited time and resources.

Rank	Theme	Exemplar responses	Percentage
1	Nothing	“Nothing”	30
2	Salary	“Increase salary”	26
3	System	“Change the way of scientific research assessment that emphasizes papers over practice” and “I hope to have more initiative in the management of athletes”	13
4	Miscellaneous	“Better technology support” and “increase the staffing of multidisciplinary teams”	11
5	Respect/recognition	“Strength and conditioning coach can be respected by the head coach, can jointly grasp the overall training load of athletes, and do not do work other than strength and conditioning training” and “gain the trust and respect of coaches and managers”	9
6	Competency	“I want to improve my competency” and “I hope to learn from the scientific research team of national sports team to improve myself”	9
7	Research	“Scientific research work is valued and studied in a suitable environment” and “better research conditions”	6

8	Equipment	“More scientific research equipment” and “increase advanced equipment”	4
9	Promotion	“Promotion of professional title” and “rules of promotion are more reasonable”	4
