

Athletes' Experience of an Individualised, Supervised Strength-Training Programme

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Abstract: The aim of the present study was to explore and describe volleyball players' experience of an individualised, supervised strength-training programme aimed at physical performance and injury prevention. The purpose was also to use the players' observations to obtain an understanding of the role of a physical coach. The study comprised nine participants (age 19) who had been involved as an experimental group in a strength-training intervention study. Data were collected using semi-structured interviews conducted by one independent interviewer. The transcribed interviews were analysed using qualitative conventional content analysis. From the analysis, three overarching themes describing the content of the text emerged: being in an enjoyable, relaxed situation, interaction between coach and athlete, mental and physical achievements. In conclusion, strength training could be used to improve self-esteem among young females. When designing strength-training intervention studies, it also seems to be important to be aware of the fear and feeling of uncertainty that could exist among the participants. From the athlete's perspective, the performance in strength training is dependent on many factors, such as team spirit, individual goal-setting and bonding with the coach, where bonding and communication seems to be the fundamentals of coaching.

Keywords: Physical performance, injury prevention, physical coach, young female athletes, volleyball, strength training

INTRODUCTION

When attempting to prevent sports injuries, it is important to be aware that participation in sports is a form of behaviour [1]. Typically, the introduction of preventive methods involves a change in or modification of the athlete's attitudes. This modification may very well conflict with the athlete's sports behaviour. Determinants that are considered to describe an athlete's preventive behaviour are knowledge, attitude, social influence, barriers and self-efficacy [1]. Prevention programmes have been shown to have a simultaneous potential to enhance athletic performance [2-4]. For this reason, it might be interesting to combine an injury prevention programme with a strength- and conditioning programme to enhance compliance in injury prevention among athletes.

Performance quality is dependent on many factors, both personal and situational. Both the individualisation and the supervision of a training programme have been discussed as contributors to the athletes' performance [5, 6]. A supervised strength and conditioning programme has been reported to enhance physical performance and improve compliance with the programme compared with a non-supervised programme [6, 7]. Strength and conditioning coaches therefore play an essential part in athlete preparation. According to Downey [8], coaching is an "art" to facilitate for people to recognise their performance, learning and progress. Coaching concerns

the empowering of the player [8]. However, to our knowledge, no previous publication studying the athletes' experiences of individualised, supervised strength training programmes with the presence of a physical coach has been presented. Such experiences are treasured in the art of coaching, as well as for the physiotherapist working with athletes, and in accordance with coaching seen as "free ones potential" [9]. Further, since humans are complex beings, it is not possible to control every factor within the subject. Because of this, even when it comes to basic programme variables (i.e. training intensity, volume and frequency), it is still impossible today to give a clear-cut prescription programme design and performance outcome. There are still questions concerning which qualities of the coach that are appreciated by the athletes. Why does supervision promote the magnitude and rate of progression in strength training? Which factors are most important to performance outcome? While it appears to be generally accepted that a qualified strength and conditioning coach plays an important role in improving athletic performance, few studies have examined the influence of coaching or supervision on physical performance and injury prevention. In addition, our understanding and knowledge of the factors contribute to successful strength and conditioning training, injury prevention, outcome and athletes satisfaction are not yet well investigated. By obtaining a greater understanding of the role of the coach, we might better be able to design strength and conditioning and injury prevention programme. To acquire a further understanding of the fundamentals of strength training and the role of the physical coach, we therefore conducted interviews with the players that had participated in an individualised, supervised strength and conditioning study. The aim of the present study

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was to explore and describe the volleyball players' experience of an individualised, supervised strength-training programme aimed at improving physical performance and injury prevention. The purpose was also to use the players' observations to obtain an understanding of the role of a physical coach.

MATERIALS AND METHODS

The study was approved by the Ethics Committee at Gothenburg University, Sweden.

Participants

Ten young female volleyball players were asked to participate. All the participants had been involved as an intervention group in a larger intervention study examining the influence on physical performance and injury prevention during 26 weeks of individualised, supervised resistance training in young female volleyball players. Since the whole intervention group consisted of ten players and they were considered to play different roles in the team, they were all chosen to create a purposeful sample. One participant declined participation. The study finally included nine participants with a mean age of 19 (17-21) years, who agreed to take part and gave their informed consent before participation.

Periodised Resistance Training

The training programme consisted of 26 weeks of progressive strength training divided into three phases, the familiarisation phase, progression phase 1 and progression phase 2. A coach (S.R.A) supervised the participants and was responsible for ensuring that exercise prescriptions were properly carried out and achieved during a workout (i.e. velocity of movement, appropriate spotting, appropriate technique and safety considerations, intensity of the training and prescribed rest periods). The familiarisation phase consisted

of a basic programme which was replaced prior to progression phase 1 in which the participants received an individual training programme. The participants noted every training session with every exercise, every set, repetitions and training load in a training diary. The participants were tested for physical performance pre and post intervention [6].

Data Collection

The data were collected using semi-structured interviews conducted by one independent interviewer and they were collected within three weeks after the intervention. The interviewer was not involved in the larger intervention study and had no previous contact with the interviewed participants. The interviewer was a physiotherapist with previous experience of conducting qualitative interviews and was also familiar with strength training. Each interview lasted approximately 45 minutes and took place in a conference room at the laboratory, which was also the location for testing physical performance and was therefore familiar to the participants. All the interviews were audio taped and transcribed verbatim. The interview guide was based on the clinical experience of the authors (Table 1). The interview covered three main topics, specifically: 1) experience of strength training; 2) experience of injury prevention; 3) experience of/with the physical coach. The interview guide was not tested in advance, but, after the first interview, one of the authors listened to the interview to ensure that the research questions were covered and that the interview addressed the purpose. The author then gave feedback to the interviewer to improve the forthcoming interviews. Each interview began by asking the participant "Can you describe one of your strength-training sessions?". Following this question, more specific questions, which focused on the participants' feelings, experiences and beliefs in relation to strength training, physical performance, injury prevention and questions about the physical coach were asked (Table 1).

Table 1. The Interview Guide

<p>Can you describe one of your strength training sessions? Expectations? Challenges? Advantages? / Disadvantages? Learned something? What was good/bad? Missing something? How would you like it to be/Suggestion for improvements? The individual programme? The most important thing about strength training?</p> <p>What is your general opinion of strength training? Advantages? / Disadvantages? Easy? / Hard? Challenging? Things that could influence?</p> <p>What is your opinion of an injury prevention programme? Influences on injuries? Advantages? / Disadvantages? The individual programme? Influence on other training regimes?</p> <p>How is an excellent physical coach? Experience of/with the physical coach? Good/bad relationship?</p> <p>What is your opinion of the coach's knowledge in strength training? / injury prevention? / volleyball?</p> <p>Advice to other physical coaches?</p> <p>The future? Continue strength training? / injury prevention? / other physical performance enhancement activities?</p> <p>Any further information?</p>

Data Analysis

The transcribed interviews were analysed using qualitative conventional content analysis, with an inductive approach, as athletes’ experiences of supervised, individualised strength training are lacking in the literature [10]. Content analysis does not require an underlying theory [11] and conventional content analysis can be used when existing theory or research literature on a phenomenon is limited [12]. In addition, content analysis is “a research method that uses a set of procedures to make valid inferences from text” [13]. To begin with, the interviews were read several times as a whole, by both authors (S.R.A and C.W), in order to become familiar with the material and obtain a sense of the whole. This was followed by the identification of meaning units addressing the aim of the study. This process was performed separately by both authors (S.R.A and C.W) and cross-checked for agreement. The units were condensed and labelled with a code. Next, the various codes were compared on the basis of differences and similarities and sorted into ten sub-themes. Finally, the sub-themes were formulated into three overarching themes. The interviews were re-read for reflection and to ensure that the themes matched the purpose of the study and that the meaning units could be outlined in the themes. Both authors (S.R.A and C.W) took part in the entire process. One of the authors (S.R.A) was involved in the larger intervention study as the physical coach which might be a potential source of bias. The other author (C.W) was not involved and had had no previous contact with the interviewed participants and had no experience of volleyball. Thus, the two authors discussed in an open and critical

dialog all the steps in the analysis process until consensus was attained [11]. Examples of process of the analysis are shown in Fig. (1). Both authors were physiotherapists and had clinical experience of strength training, physical performance and injury prevention.

RESULTS

From the analysis, three overarching themes and ten sub-themes describing the content of the text emerged. These themes are presented in Table 2. Illustrations take the form of quotations for categories and are marked with a number for each participant.

Being in an Enjoyable, Relaxed Situation

This theme was shaped by sub-themes describing three different contents. The sub-themes are linked to each other by the situation and feelings of being at the gym working out.

Feelings of Delight about the Training

All the participants said that the training as a whole was enjoyable and some of them said that the feelings of pleasure about strength training were unexpected. They also said that the excitement was partly caused by the unexpected physical achievements.

“You go there because you want to train and think it’s fun.” (No. 1)

“It’s fun now. I didn’t think it was before, going to the gym wasn’t particularly enjoyable. What’s more, you see good results.” (No. 7)

Meaning unit	Condensed meaning unit	Code	Sub-theme	Theme
I didn't really think it was anything for me, because, when I'd tried it before, I didn't enjoy it. But it was... it was great fun, it really was.	It was great fun.	Enjoyment	Feelings of delight about the training	Being in an enjoyable, relaxed situation
It's the evenings at the gym with S and the team. Going there, meeting everyone and training together instead of going on your own creates a real feeling of fellowship.”	Meeting everyone and training together creates a real feeling of fellowship.	Companionship	Training with the group	
Because I sometimes feel, when I have too much at school and things like that, it's nice to get away and train and forget my problems and think about something else.	When I have too much at school it's nice to get away and train and forget my problems.	Pause	Having a break from the ordinary	
She's also really good at pushing (laughs), she inspires you and pushes you up to new weights, even if you don't really want to, because you think 'No, that's a bit heavy' and then you lift it and it's fine.	She inspires you and pushes you up to new weights, even if you don't really want to.	Challenging	Being motivated, encouraged and challenged	Interaction between coach and athlete
She tries to be everywhere at the same time, but that's naturally impossible. But she explains, she checks, she gives everyone the same amount of attention and... she encourages everyone. You don't feel, I don't think there's anyone who feels that they are forgotten or neglected.	She gives everyone the same amount of attention and encouragements.	Individual devotion	Being acknowledged	
So, if we can't manage, we haven't got the strength, she is so knowledgeable and good that she realises.	She knows if we can't manage.	Guidance	Feeling secure	Mental and physical achievements
You want to show it all the time (laughs), no I mean (laughs). You get so much more self-confidence from getting stronger and you learn more about your body when you do strength training and do things like that, push yourself to the maximum and know what you can manage. So I feel that I have much more self-assurance about my body, I have more self-esteem and I know exactly... in the past, I didn't really understand my body.	You get so much more self-confidence from getting stronger. I have much more self-assurance about my body, I have more self-esteem.	Self-esteem	Improving confidence	
I feel much stronger or, for the first time in my life, I feel that I have muscles.	I feel much stronger, I feel that I have muscles.	Increased strength	Feeling physically stronger	
This is how you feel when you take part in sport or something, you feel that your fitness is better and that you're stronger, when you work, that you have the energy, you can do much more than before.	You feel that your fitness is better and that you're stronger and have more energy when you work.	Increased work energy	Increasing capacity in daily life and experiencing advanced performance in sport	
I noticed it very, very soon after a month, I found my work much easier, I didn't have that much of pain at the weekends any longer and in the evenings and so on... so it was... lovely.	I noticed it very, very soon, I found my work much easier, I didn't have that much of pain at the weekends	Decreased pain	Having less pain	

Fig. (1). Examples of meaning units, condensed meaning units, codes, subthemes and themes from the present data.

Table 2. Themes and Sub-Themes from the Analysis

Themes	Sub-themes
Being in a enjoyable, relaxed situation	Feelings of delight about the training Training with the group Having a break from the ordinary
Interaction between coach and athlete	Being motivated, encouraged and challenged Being acknowledged Feeling secure
Mental and physical achievements	Improving confidence Feeling physically stronger Increasing capacity in daily life and experiencing advanced performance in sport Having less pain

“Well, before I started, it was very much a question of ‘OK, training at the gym, how boring!’ It was more or less like this, ‘OK, that’s something the boys in my class do, build muscles and become really beefy bodybuilders’. I just thought, ‘No way, that’s not for me ’ (laughs). In the end, I realised that it was actually fun...” (No. 6)

“I didn’t really think it was anything for me, because, when I’d tried it before, I didn’t enjoy it. But it was... it was great fun, it really was.” (No. 3)

Training with the Group

All the participants mentioned that the often enjoyable moments during the training sessions were partly due to the solidarity of the group. They also said that the other team members’ performance was inspiring.

“It’s the evenings at the gym with S and the team. Going there, meeting everyone and training together instead of going on your own creates a real feeling of fellowship.” (No. 4)

“You want to be as good as the teams that are at the top and stay there, so you try to train with them.” (No. 9)

“The main reason was that you did it with the team, so we started training together, you didn’t come on your own and feel somewhat lost. You had someone, you could always work out with someone. That was fun. Being able to support one another and receive praise from one another or being supported by the others. That’s great! There’s a difference between going on your own and going with the volleyball team.” (No. 1)

Having a Break from the Ordinary

Some of the participants also stated that they were able to progress in their training, in spite of other obligations, and that, conversely, the training sessions were experienced as a temporary break from everyday tasks.

“Because I sometimes feel, when I have too much at school and things like that, it’s nice to get away and train and forget my problems and think about something else.” (No. 4)

“That I get out all my energy owing to how things been during the day. If I’ve had a hard day and I’m a bit fed up, then I need to get rid of my anger. The tiredness is wonderful and I sleep so well when I get home.” (No. 6)

Interaction between Coach and Athlete

This theme contains three sub-themes which are linked to each other by the athletes’ experience of the coach. The first and second sub-theme are interwoven whereas the third sub-theme stands alone.

Being Motivated, Encouraged and Challenged

The participants pointed out that one of the main tasks for the coach was to motivate and encourage. Despite tiredness and bad moods, the coach was able to give the participants working energy and fighting spirit through verbal encouragement. The coach also set challenges that motivated the participants as they described a sense of triumph when they were able to lift a heavier weight or do more repetitions.

“She stands there and screams and you really find the energy. If she hadn’t been there, I would probably stop when I felt I couldn’t manage, but then S arrives and starts screaming.” (laughs) (No. 4)

“I trained, but I didn’t really push myself because I knew I was going to do more and so I didn’t really go for it. But then S came along and helped us and said I should aim higher and higher. That’s when I realised I could do more.” (No. 7)

“She’s there when you want her to be and when you don’t... especially when you don’t! (laughs) When things aren’t going so well on the bench, she comes over and I add a few more kilos.” (No. 9)

“She’s also really good at pushing (laughs), she inspires you and pushes you up to new weights, even if you don’t really want to, because you think ‘No, that’s a bit heavy’ and then you lift it and it’s fine.” (No. 1)

Being Acknowledged

The encouragement the participants experienced was also often described as a result of acknowledgment and attention towards the individual. The participants felt that the coach was involved in the individual and had a knowledge of the individual needs and capabilities. In addition, they said that a coach’s ability to develop individual exercise programmes and make sure that personal goals were realised was important.

“After all, she thinks about what’s best for us. It isn’t a question of ‘You are going to do this’, as if you were in the army, so get on with it, she cares about us, she is very personal, she sees each individual, even if I can manage more than someone else, the other person doesn’t get picked on because... she can’t do as much or the other way round. She really adapts to us, to the way we are, open and happy.” (No. 1)

“She tries to be everywhere at the same time, but that’s naturally impossible. But she explains, she checks, she gives everyone the same amount of attention and... she encourages everyone. You don’t feel, I don’t think there’s anyone who feels that they are forgotten or neglected.” (No. 5)

“It’s trying to get involved with the individuals as much as possible and understanding the needs of the different people in the team. It’s also a question of really seeing everyone, that’s also very important, so that you don’t just focus on a few, that everyone, everyone really feels that they get the help and training they need.” (No. 6)

The participants also appreciated the friendly, personal side of the coach, but they also pointed out that, as the coach was present, they felt obliged to attend the training session.

“It’s been great having her here. We have been able to joke with her – not about her, with her (laughs)... and she has taken it well, she has understood.” (No. 2)

“So I also feel an obligation to her, after agreeing to do this and we are damn well going to take part in the training as well.” (No. 5)

Feeling Secure

All the participants felt that the coach provided safety and that the coach was available for technique instructions and securing exercises. The participants also described the coach’s ability to set boundaries and motivate the participants to work to their maximum without exceeding their safe potential. This provided a feeling of safety and the courage to progress with the training (lifting heavier weights).

“When we do the bench press, she stands behind us in case we can’t manage.” (No. 4)

“So, if we can’t manage, we haven’t got the strength, she is so knowledgeable and good that she realises.” (No. 2)

“There’s a girl at volleyball, and she has failed, but she wants to try again, but S can say no, because she knows it isn’t going to work.” (No. 1)

Mental and Physical Achievements

Four sub-themes which are related to each other by the athletes’ mental and physical experiences were discovered in this theme. The second and third sub-theme are intertwined containing physical experience whereas the first and fourth sub-theme stand alone.

Improving Confidence

The majority of the participants expressed a sense of fear and uncertainty when starting the training period. However, they all said that they had become more secure in themselves, as they described a feeling of improving confidence and self-esteem.

“It was pretty boring. Every time I went to the gym, I didn’t know how to use the machines, so all I did was run on the treadmill, because I knew how to do that. Now I know how to use most of the machines and I’m not afraid to try the new ones either.” (No. 7)

“I’ve learned to understand my body as well – what I can manage and what I can’t.” (No. 3)

“You want to show it all the time (laughs), no I mean (laughs). You get so much more self-confidence from getting stronger and you learn more about your body when you do strength training and do things like that, push yourself to the maximum and know what you can manage. So I feel that I have much more self-assurance about my body, I have more self-esteem and I know exactly... in the past, I didn’t really understand my body.” (No. 5)

“I’m really big-headed about the muscles I have.” (No. 5)

Feeling Physically Stronger

All the participants said that they felt physically stronger and more alert than they had before the training period.

“I feel much more alert when I have been at training, or, if I have trained the day before, I still feel more alert.” (No. 4)

“The whole of my body is stronger and I know what to train and feel that I have better balance in my body.” (No. 5)

“I feel much stronger or, for the first time in my life, I feel that I have muscles.” (No. 5)

Increasing Capacity in Daily Life and Experiencing Advanced Performance in Sport

The experience of physical achievements described by the participants was also expressed in the day-to-day activities and other sports activities. The participants felt that they had more strength to participate in everyday activities and that volleyball-specific tasks had improved.

“I feel much brighter and happier and people have noticed this at school as well.” (No. 8)

“This is how you feel when you take part in sport or something, you feel that your fitness is better and that you’re stronger, when you work, that you have the energy, you can do much more than before.” (No. 2.)

“You feel so much stronger when you jump up and so on. More mobile and flexible. Then there’s my fitness, I have more energy when I play a match and so on.” (No. 4)

“You notice, when you hit the volleyball, that you have become a little... that you can serve and do other things better.” (No. 7)

Having Less Pain

The participants said that the increase in strength had helped to reduce pain and that, in return, they had obtained greater staying power.

“It isn’t so much of a problem. A year ago, I had so much pain that I could hardly train at all. Now I hardly ever feel anything. That’s wonderful... it proves that training produces results ...” (No. 6)

Table 3. The Contribution from the Present Study Compared to Previous Literature

<p>What is already known about this topic</p> <ul style="list-style-type: none"> • A supervised strength and conditioning programme has been reported to enhance physical performance and improve compliance with the programme compared with a non-supervised programme. • Strength and conditioning coaches play an essential part in athlete preparation. • Coaching is believed to be an "art" to facilitate for people to recognise their performance, learning and progress. <p>What this paper adds</p> <ul style="list-style-type: none"> • Strength training could be used to improve self-esteem among young females. • The performance achievements in strength training were thought to be dependent on many factors, such as mental condition, team spirit, individual goal-setting, physical pain and a good relationship with the coach. • According to the athletes, bonding and communication were fundamentals in coaching.

"I noticed it very, very soon after a month, I found my work much easier, I didn't have that much of pain at the weekends any longer and in the evenings and so on... so it was... lovely." (No. 2)

"In the past, I could stand for a couple of hours, for example, and then I had terrible pain in my knees, so I had to sit down for a while. Now I can manage for much longer, even if I feel my knees, I have the energy and strength." (No. 4)

DISCUSSION

This qualitative study provides an insight into the experience of individualised, supervised strength training for physical performance and injury prevention. This contribution could be viewed in Table 3. The results also include the role of a physical coach. The first theme, being in an enjoyable, relaxed situation describes the feeling of enthusiasm towards the training. All the participants said that they generally had fun during the workout. In addition, most of the participants were surprised about these pleasant feelings. Some participants said that, before they started the strength-training period, strength training symbolised well-trained men representing boring, egocentric behaviour. This may very well express uncertainty and ignorance about strength training among young women. However, most of the participants pointed out that the results of the strength training were unexpected and that they helped to generate a greater feeling of joy. The progress during the training period exceeded the participants' expectations and they were generally proud of what they had accomplished. Enjoyment, fun, passion and love of the game have previously been ranked as very important issues for successful athlete performance [14]. Moreover, all the participants said that having team members to work with during the training session encouraged them to perform better. They also emphasised the team spirit, which they explicitly stated produced support and a feeling of joy. This finding is in accordance with a recent investigation of elite skiing athletes and motivational climate [15]. In this study, the athletes pointed out that the team members are of major importance for both performance and well-being. The

athletes in the study by Pensgaard and Roberts [15] also emphasised the importance of an accepting, caring climate, which has been described as a mastery climate, instead of winning and beating others, which has been described as a performance climate. Mastery and performance climate are elements of achievement goal theory that distinguish two different viewpoints, task orientation and ego orientation. An individual who is task oriented adopts a self-referenced notion of success, believing that ability is demonstrated through the development and/or mastery of new skills, putting in maximum effort and improving one's performance. In contrast, an individual who is ego oriented takes on a normative conception of ability and believes that skills are demonstrated by exceeding the performance of others [16]. Clearly, other team members appear to be important elements in the athletes' performance and motivation. Other factors that the participants in the present study felt could influence the atmosphere and work-out performance were other normal obligations. Some of the participants said that, if they had a bad or good day at school or work, it would probably affect the training session. However, they also stressed that, after a bad day, it was a kind of relief to be at the gym and do the strength training to "...get away and put one's mind at rest". Taken as a whole, the strength training was experienced as an enjoyable time and the environment and performance were affected by the team spirit and the present mental condition.

The second theme, interaction between coach and athlete, reflects the athletes' perception of the coach. All the participants clearly stated that they attached great importance to the coach as someone who could motivate and encourage the athletes. This was thought to be achieved by verbal encouragement and involvement in the individual athlete. The encouragement was sometimes experienced as dominant and focused on performance, when the coach added more weight and pushed the participant throughout a set, for example. This was, however, described as a good thing that challenged the athletes and helped to keep the intensity high. Instead of being "militarily aggressive", they felt that the coach was devoted and inspiring. The coach's ability to set boundaries

and realistic individual goals was also appreciated. Intervention with clear goal-setting has previously been shown to result in higher adherence to the rehabilitation programme and high levels of self-efficacy compared with a non-goal-setting intervention [17]. Moreover, individual dissimilarities and personal interaction, including support from coaches, are mechanisms that could have an effect on goal-setting strategies [18]. All the participants expressed similar feelings relating to acknowledgement of and attention to the individual. They also experienced a feeling of support from the coach and felt that they had a good relationship with the coach. This bonding might be one explanation for the feeling of obligation towards the coach that is sometimes expressed. Some of the participants felt obliged to attend the training session. This is in accordance with previously research which has affirmed that bonding with the coach influences athletes' participation [14]. In addition, all the participants pointed out that it was important that they could trust the coach and expressed a feeling of safety. They also attached great importance to the coach's knowledge of technique and the ability to see the athlete's potential. This is in agreement with previously theory by Whitmore [9] who believe that the coach's believes in the potential of the client is of importance. Whitmore [9] believes that people are only able to change simply that which they are aware. Responsibility must stay with the player if they are to perform. Whitmore also invented the GROW model, which is a used and known model in coaching. The GROW model coaching approach starts with looking at what we want to achieve (Goal); then where we are (Reality). It is assumed that it is easier then to see what is in the gap (Options), and when that is identified we can take the appropriate action (Will). The idea about coaching in this study could also be acknowledged in Downey's theory about coaching [8]. From the present study we believe that the role of the coach is to encourage the athlete to believe in herself, to help the athlete discover the skills and energy she needs to alter self-confidence into action, and then to motivate the athlete towards achievement. For this to be achieved the fundamentals of coaching seems to be bonding and communication. Taken as a whole, the coach plays an important role when it comes to motivating athletes, where verbal encouragement and attention to the individual are thought to be significant tools. Instead of military discipline, a more friendly approach is appreciated. The feeling of bonding and obligation might be an essential topic when discussing training compliance.

The third theme revealed the participants' feeling of improved mental and physical condition. The feeling of fear and uncertainty was replaced by a feeling of high self-esteem during the training period. These positive emotions were said to be partly a result of gains in strength and "muscles". It has previously been shown that resistance training can result in both physiological and psychological improvements and be able to improve self-confidence [19]. The participants also experienced a sense of well-being and, not surprisingly, improved physical strength. They also felt that the strength training had resulted in an improved capacity for working and school activities. They also sensed that the strength training had an impact on their volleyball skills, as they described an improvement in jumping and spiking power, as well as greater staying power during matches. Moreover, the

experience of everyday and sporting achievements was also described as a result of reduced pain. Some of the participants had experiences of everyday pain which inhibited daily working situations and sporting abilities. All the participants with these experiences also said that they experienced a reduction in pain after the training period. For some of these participants, the pain decreased rapidly. The experience of reduced pain is not surprising, as insufficient strength appears to be associated with pain syndromes [20, 21]. Taken as a whole, all the players reported physical achievements which were clearly intertwined with the mental experiences.

Methodological Considerations

One limitation of the present study was that the participants comprised a small sample of nine players. However, these participants were the only ones that could be considered, as they were the only ones exposed to and experienced in the specific training regimens. Moreover, the sample size is regarded as less important than the variation in data generated by the sample [22]. There are no rules for sample size in qualitative studies. The sample size is decided by the research question and depends on the knowledge that is required [23]. According to Patton [23], the sample size in qualitative research is selected purposefully, which provides the power to select information-rich cases. The sample strategies in the current study can be described as criterion sampling [23]. Criterion sampling means picking all the cases that meet some criterion, in this case the exposed and experienced volleyball players. Although the participants in the present study all play in the same team, they are thought to create dissimilarity in data since they all have different tasks and roles to play in the team. Thus, one strength of the present study was the fact that the sampled participants had similar background but various experiences which increased the chances to shed light on the research from a variety of aspects [23]. It is important to remember that the current study may only address women's experiences and we do not know if the result would have been different if men had also been included.

Another issue of concern in the present study is that one of the authors (S.R.A) that took part in the analysis was involved in the intervention study as the physical coach. This might be a potential source of bias. Ideally, the analysts should not be involved in the participant intervention, if that is the context that is being investigated. It is important to recognise when the researcher's own beliefs intrude on the analysis. However, the literature emphasises that it is not possible to be completely free of bias [24]. In addition, insight, expertise and experience in a research field are thought to provide a broader understanding of the phenomena and multiple meanings are always present in data [25]. To assure internal validity from the present study, we used the common criteria for dependability, credibility and transferability [22]. We chose to read the interviews separately and then seek agreement in the research group. We also selected representative quotations from the transcribed text. One of the strengths of the present study is that the participants were interviewed a relatively short time, within three weeks, after the intervention. As the participants were interviewed in retrospect, it might be important for the interviews to be carried out soon afterwards to avoid the loss of recollections.

CONCLUSIONS

This study demonstrates that strength training could be used to improve self-esteem among young females. When designing strength-training intervention studies, it also seems to be important to be aware of the fear and feeling of uncertainty that could exist among the participants. From the athlete's perspective, the performance achievements in strength training are dependent on many factors, such as mental condition, team spirit, individual goal-setting, physical pain and a good relationship with the coach. From the present study we believe that the role of the coach is to encourage the athlete to believe in herself, to help the athlete discover the skills and energy she needs to alter self-confidence into action, and then to motivate the athlete towards achievement. For this to be achieved the fundamentals of coaching seems to be bonding and communication.

CONFLICT OF INTEREST

None declared.

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