



SPQ20

sport personality questionnaire

> User Manual

Personality and Mental Skills Assessment

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1.0 Introduction

This User Manual describes the administration, interpretation and technical properties of the SPQ20. It is available as a soft copy download only from www.myskillsprofile.com.

1.1 SPQ20 questionnaire

The SPQ20 sport personality questionnaire is designed to provide information about the personality and mental factors that contribute to elite performance in sport. It is intended to be used by sport psychologists and coaches to help athletes understand and develop the mental skills needed to perform successfully in competition. The SPQ20 is a PTC Registered test. It has been submitted to the British Psychological Society Psychological Testing Centre (PTC) and the Buros Institute of Mental Measurements for review.

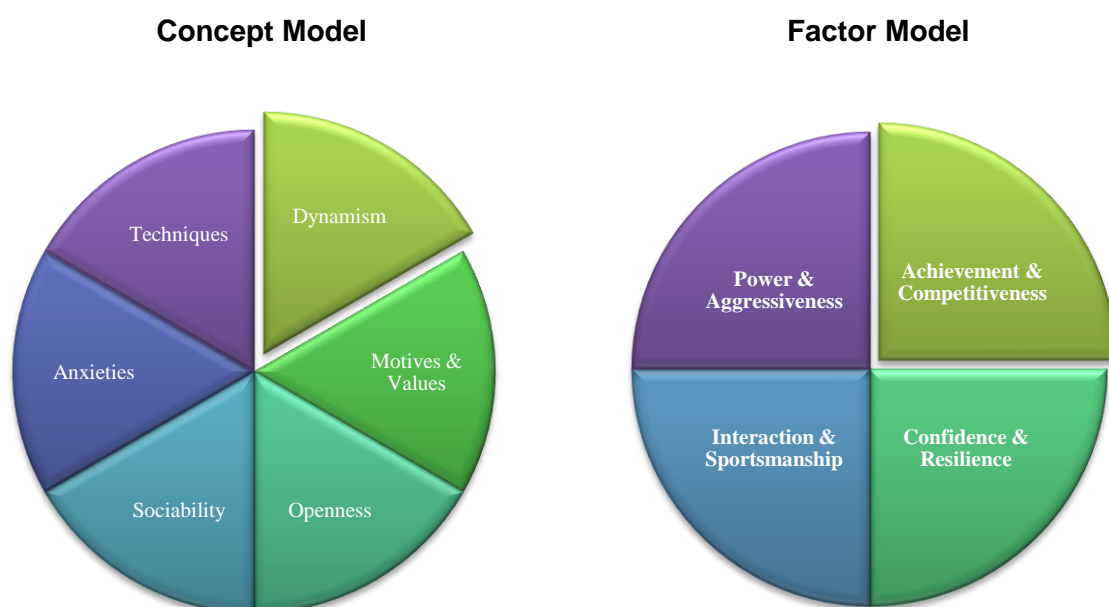
1.2 Concept model

The SPQ20 questionnaire is based on a concept model of personality and mental skills that emerged from a review of the sport psychology literature. Six key domains of sport mental skills were identified: Dynamism, Motives & Values, Openness, Sociability, Anxieties and Techniques.

1.3 Factor model

Although the concept model guided the development of scales for the SPQ20 questionnaire, statistical analysis of data from a large international sample of athletes indicated that the instrument measured four clusters of mental skills. These are labeled: Confidence and Resilience, Achievement Drive and Competitiveness, Interaction and Sportsmanship and Power and aggressiveness. Figure 1 illustrates the two models.

Figure 1. The SPQ20 models of sport personality



The SPQ20 computer-generated feedback report provides a profile of an athlete's mental skills based on the statistical factor model. Table 1 summarizes what the SPQ20 questionnaire scales measure. More detailed descriptions of scale content are provided in Chapter 3 on Scale Descriptions.

The SPQ20 is similar to the OPQ occupational personality questionnaire (SHL, 2009) in presenting conceptual and factor models to explain what the test measures. For example, the general OPQ model of personality identifies four conceptual domains but statistical analysis shows that it measures the Big Five Factors.

1.4 Access

The SPQ20 is designed to be used by sport psychologists and coaches, but is also available direct to athletes from the website www.sportsconfidence.biz.

1.5 Psychometric criteria

The SPQ20 was designed to meet the key criteria in the EFPA Review Model for the Description and Evaluation of Psychological Tests (Bartram, 2002). The EFPA Review Model was produced to support and encourage the process of harmonizing the reviewing of tests. It provides a standard set of criteria to assess the quality of modern psychometric tests. These cover the common areas of test review such as norms, reliability, and validity.

Table 1. Summary of SPQ20 concept model key areas and scales

Scale	What the scale measures	
Competitiveness	The degree to which you enjoy competing and want to get in the winner's circle.	Dynamism
Aggressiveness	The extent to which you adopt an aggressive attitude and tend to intimidate opponents.	
Self-Efficacy	How much self-confidence you possess and how quickly you bounce back from setbacks.	
Flow	How far you are able to immerse yourself in your performance and play in the zone.	
Achievement	Whether you are motivated to train hard and are prepared to make personal sacrifices to achieve excellence.	Motives & Values
Power	The extent to which you enjoy having authority over people and aspire to leadership positions.	
Conscientiousness	The extent to which you prepare thoroughly, show self-discipline, and stay with the plan.	
Ethics	Whether you have strong principles, behave ethically, and show sportsmanship.	
Adaptability	Whether you are open to new ideas and suggestions, and whether you keep up with technical developments.	Openness
Self-Awareness	Whether you ask for feedback, demonstrate awareness of your strengths and weaknesses, and reflect on your performance.	
Intuition	The extent to which you use your instincts and intuition in making performance decisions.	
Relationships	The degree to which you develop relationships, engage in conversation, and socialize with other athletes.	Sociability
Empathy	The extent to which you listen to and show concern for other contestants' views, feelings, and needs.	
Emotions	How far you are able to regulate your feelings and emotions to maximise your performance.	
Managing Pressure	How effectively you handle anxiety and tension before important events.	Anxieties
Fear of Failure	The degree to which you are afraid of failing, letting people down, and not living up to your own and other people's expectations.	
Burnout	Whether you are experiencing burnout symptoms such as apathy, fatigue, anxiety, and isolation.	
Self-Talk	The extent to which you talk positively to yourself to maintain motivation, stay calm, and perform well.	Techniques
Visualization	How far you make use of imagery to help play well, rehearse performances, and stay calm.	
Goal Setting	Whether you have identified priorities and goals to help manage your development as an athlete.	

2.0 Administration

The SPQ20 can only be administered online via the Internet. There are two ways that athletes can be tested.

2.1 Administered by professional

Where the test is being administered to a group of athletes by a sports psychologist or coach, the athlete receives an email from the test administrator containing a hyperlink which takes the test taker to a testing screen with instructions on how to complete the test. The test taker then goes through a series of screens with the questions and completes a personal details form.

Once the assessment test has been completed, the athlete may view or download the computer-generated feedback report if the online testing service has been set up to provide feedback reports to test takers. The online testing system can be set up by a test administrator to have feedback reports emailed to the test administrator, or to the test taker, or to the test taker and to the test administrator.

2.2 Direct access

Athletes can also purchase a SPQ20 assessment test direct from sportsconfidence.biz. In this case, the athlete is presented with instructions about how to complete the test, does the test and then completes a personal details form. The athlete then pays for the assessment by credit card and once the transaction has been processed, the athlete can view and download the feedback report in PDF format. Test takers can also request a copy of their feedback report to be emailed to them.

2.3 Scoring and norming

The scoring and generation of feedback reports are done online. An athlete's SPQ20 raw scores are compared to a very large international comparison group of athletes who have answered the questionnaire. Details of this norm group are given in the Norms section in Chapter 6.

3.0 Scale Descriptions

Each scale description table in this chapter contains elements covering the meaning of low scores, moderate scores and high scores.

3.1 Scale items

The SPQ20 questionnaire has 8 items per scale with equal numbers of positively and negatively keyed items. The tables below present examples of the items.

3.2 Relationships with other scales

The final section of each table shows other scales that the scale correlates highly with. These correlations are from the international comparison group. The full intercorrelation matrix is shown in Table 6 in Chapter 5.

3.3 Scale contents

Scale	Page
Competitiveness	10
Aggressiveness	11
Self-efficacy	12
Flow	13
Achievement	14
Power	15
Conscientiousness	16
Ethics	17
Adaptability	18
Self-awareness	19
Intuition	20
Relationships	21
Empathy	22
Emotions	23
Managing pressure	24
Fear of failure	25
Burnout	26
Self-talk	27
Visualization	28
Goal setting	29
Impression management	30

Key Area 1. Dynamism

Scale 1.1. Competitiveness

High scorers

Description

Enjoy competing against others, dream about winning, and long to be the best.

Typical positive item

I have wanted to be in the winner's circle.

Moderate scorers

Description

Are moderately spirited and competitive.

Or

Enjoy winning but do not regard it as the most important thing.

Low scorers

Description

Get satisfaction from participating and are less concerned about whether they win or lose.

Typical negative item

I have lacked the will to win.

Relationships with other scales

Strongest correlations with

Achievement
Self-talk
Conscientiousness

Key Area 1. Dynamism

Scale 1.2. Aggressiveness

High scorers

Description

Play aggressively and tend to intimidate opponents.

Typical positive item

I have been an aggressive competitor.

Moderate scorers

Description

Play moderately aggressively.

Or

Play aggressively in some situations but not others.

Low scorers

Description

Tend not to display an aggressive attitude or perform aggressively.

Typical negative item

I have believed that it is wrong to show aggression.

Relationships with other scales

Strongest correlations with Power

Key Area 1. Dynamism

Scale 1.3. Self-efficacy

High scorers

Description

Display a high degree of confidence and self-belief and recover quickly from setbacks.

Typical positive item

I have bounced back quickly from setbacks.

Moderate scorers

Description

Show a fair degree of confidence and self-belief.

Or

Display confidence and self-belief in some situations but not in others.

Low scorers

Description

Lack confidence and self-belief and suffer mental lapses.

Typical negative item

I have got down on myself too easily.

Relationships with other scales

Strongest correlations with	Fear of Failure
	Flow
	Self-talk

Key Area 1. Dynamism

Scale 1.4. Flow

High scorers

Description

Feel that they are currently playing in the zone.

Typical positive item

I have felt my play rise to a new level.

Moderate scorers

Description

Are performing reasonably well but falling short of playing in the zone.

Or

Have had moments in competitions when they have felt like they are playing in the zone.

Low scorers

Description

Feel they are not performing to the best of their ability at the present point in time.

Typical negative item

I have failed to perform to the best of my ability.

Relationships with other scales

Strongest correlations with	Self-efficacy
	Self-talk
	Fear of failure

Key Area 2. Motives and Values

Scale 2.1. Achievement

High scorers

Description

Want to make their mark, give total commitment, keep on trying to do their best, and are willing to make personal sacrifices.

Typical positive item

I have wanted to make my mark.

Moderate scorers

Description

Possess a fair amount of achievement drive but maintain a balance between sport and other parts of their lives.

Or

Demonstrate motivation to achieve in some practice situations and competitions but not in others.

Low scorers

Description

Are less concerned about getting on, doing well, and making their mark. Do not push themselves and may be perceived as lacking motivation to fulfill their potential.

Typical negative item

I have given less than 100 percent.

Relationships with other scales

Strongest correlations with

Conscientiousness
Competitiveness
Self-talk

Key Area 2. Motives and Values

Scale 2.2. Power

High scorers

Description

Are motivated by exercising power and authority over people.

Typical positive item

I have wanted to have authority over people.

Moderate scorers

Description

Are moderately interested in exercising control.

Or

Show an aptitude for team leadership in some situations but not others.

Low scorers

Description

Tend not to be motivated by power and authority.

Typical negative item

I have avoided putting myself forward for leadership positions.

Relationships with other scales

Strongest correlations with

Competitiveness
Self-talk
Relationships

Key Area 2. Motives and Values

Scale 2.3. Conscientiousness

High scorers

Description

Prepare thoroughly, train hard, and stay with the plan.

Typical positive item

I have been reliable and dependable.

Moderate scorers

Description

Are moderately responsible and hard-working.

Or

Can usually be relied on to fulfill their responsibilities and commitments.

Low scorers

Description

Tend to lack self-discipline and can't always be relied on to fulfill their responsibilities and commitments.

Typical negative item

I have felt unprepared before competing.

Relationships with other scales

Strongest correlations with	Achievement Competitiveness Self-talk
-----------------------------	---

Key Area 2. Motives and Values

Scale 2.4. Ethics

High scorers

Description

Display sportsmanship, try to do the right thing, and avoid performance enhancement drugs.

Typical positive item

I have displayed strong ethics.

Moderate scorers

Description

Show a reasonable degree of ethical awareness.

Or

Act in an ethical manner in some situations but not others.

Low scorers

Description

Are prepared to take risks and behave unethically in order to succeed.

Typical negative item

I have believed the ends justified the means.

Relationships with other scales

Strongest correlations with	Empathy Self-awareness
-----------------------------	---------------------------

Key Area 3. Openness

Scale 3.1. Adaptability

High scorers

Description

Keep up with technical developments, experiment with new ideas and techniques, and take risks in order to succeed.

Typical positive item

I have experimented with new ideas and techniques.

Moderate scorers

Description

Are as change-oriented and adaptable as the average athlete.

Or

Adapt fairly quickly in some practice situations and competitions but not in others.

Low scorers

Description

Prefer stability and continuity to frequent change, are slow to accept innovation in sport, and are somewhat reluctant to take risks.

Typical negative item

I have avoided using the latest performance aids.

Relationships with other scales

Strongest correlations with

Achievement
Competitiveness
Conscientiousness

Key Area 3. Openness

Scale 3.2. Self-awareness

High scorers

Description

Are aware of their strengths and weaknesses and where they need to improve.

Typical positive item

I have reflected on past performances.

Moderate scorers

Description

Show a reasonable degree of self-awareness.

Or

Demonstrate self-awareness in some situations but not others.

Low scorers

Description

Are unaware of their strengths and weaknesses and where they need to improve.

Typical negative item

I have been reluctant to ask for feedback.

Relationships with other scales

Strongest correlations with	Self-talk
	Emotions
	Goal Setting

Key Area 3. Openness

Scale 3.3. Intuition

High scorers

Description

Use their instincts and intuition to help guide their performance.

Typical positive item

I have let my deep-down inner feelings guide me.

Moderate scorers

Description

Use feelings and emotions to a moderate extent.

Or

Use facts and information as well as feelings and emotions when deciding what to do.

Low scorers

Description

Prefer to analyze situations rather than rely on feelings and emotions.

Typical negative item

I have ignored my gut instincts.

Relationships with other scales

Strongest correlations with

Self-efficacy
Visualization
Conscientiousness

Key Area 4. Sociability

Scale 4.1. Relationships

High scorers

Description

Enjoy being where the action is, find it easy to talk to people, and use sport as a platform for building relationships.

Typical positive item

I have been warm and friendly to other athletes.

Moderate scorers

Description

Are moderately extravert and outgoing.

Or

Enjoy the company of others but also value their privacy.

Low scorers

Description

Are quiet and reserved in groups and dislike being the centre of attention.

Typical negative item

I have avoided socializing with other athletes.

Relationships with other scales

Strongest correlations with	Burnout
	Self-talk
	Self-awareness

Key Area 4. Sociability

Scale 4.2. Empathy

High scorers

Description

Go out of their way to help people, take account of people's views and feelings, and praise others when they perform well.

Typical positive item

I have gone out of my way to help people.

Moderate scorers

Description

Show a reasonable degree of empathy and warmth.

Or

Show empathy and warmth in some situations but not others.

Low scorers

Description

Are independent-minded and tend to put their own interests first.

Typical negative item

I have ignored other people's views and ideas.

Relationships with other scales

Strongest correlations with

Conscientiousness
Achievement
Self-awareness

Key Area 4. Sociability

Scale 4.3. Emotions

High scorers

Description

Manage to regulate their feelings and emotions successfully.

Typical positive item

I have had a successful technique for controlling my feelings and emotions.

Moderate scorers

Description

Manage mood changes as effectively as the average athlete.

Or

Manage to control their feelings and emotions in some situations but not others.

Low scorers

Description

Have not found a successful technique for regulating their feelings and emotions.

Typical negative item

I have failed to control my emotions.

Relationships with other scales

Strongest correlations with	Burnout Self-efficacy Flow
-----------------------------	----------------------------------

Key Area 5. Anxieties

Scale 5.1. Managing Pressure

High scorers

Description

Are able to relax and stay calm and confident before competitions.

Typical positive item

I have felt confident before competitions.

Moderate scorers

Description

Stay reasonably calm before important events.

Or

Manage to stay calm in some situations but have difficulty in others.

Low scorers

Description

Have difficulty staying calm and in control before important events.

Typical negative item

I have tightened up before competitions.

Relationships with other scales

Strongest correlations with	Fear of failure
	Self-efficacy
	Flow

Key Area 5. Anxieties

Scale 5.2. Fear of failure

High scorers

Description

Are confident of performing well and showing their ability, and do not worry about living up to other people's expectations.

Typical positive item

I have been confident of succeeding and gaining people's trust.

Moderate scorers

Description

Do not usually worry about failing.

Or

Conquer fear of failure in some situations but not others.

Low scorers

Description

Worry about not performing well in front of other people.

Typical negative item

I have been afraid of failing and feeling ashamed and embarrassed.

Relationships with other scales

Strongest correlations with	Self-efficacy
	Flow
	Burnout

Key Area 5. Anxieties

Scale 5.3. Burnout

High scorers

Description

Follow a healthy lifestyle, get sufficient sleep and rest, and take care not to burn out.

Typical positive item

I have followed a healthy lifestyle.

Moderate scorers

Description

Manage stress as effectively as the average athlete.

Or

Manage to handle stress in their lives and follow a reasonably healthy lifestyle.

Low scorers

Description

Display the physical and emotional symptoms of burnout.

Typical negative item

I have felt physically and emotionally exhausted.

Relationships with other scales

Strongest correlations with

Self-talk
Emotions
Self-efficacy

Key Area 6. Techniques

Scale 6.1. Self-talk

High scorers

Description

Use positive self-talk successfully to manage performance stress and anxiety.

Typical item

I have told myself not to give up.

Moderate scorers

Description

Use positive self-talk to a moderate extent.

Or

Use self-talk successfully in some situations but sometimes find negative thoughts and self-talk interfering with performance.

Low scorers

Description

Allow negative thoughts and self-talk to interfere with their performance.

Typical negative item

I have talked myself into giving up.

Relationships with other scales

Strongest correlations with	Self-Efficacy Burnout Flow
-----------------------------	----------------------------------

Key Area 6. Techniques

Scale 6.2. Visualization

High scorers

Description

Use visualization to rehearse performances and regulate their emotions.

Typical positive item

I have used my imagination to rehearse an upcoming performance.

Moderate scorers

Description

Use visualization to a moderate extent.

Or

Have found that visualization techniques have helped in some situations but not others.

Low scorers

Description

Have not learned how to use visualization techniques successfully.

Typical negative item

I have experienced few benefits from using imagery/visualization.

Relationships with other scales

Strongest correlations with

Competitiveness
Self-talk
Achievement

Key Area 6. Techniques

Scale 6.3. Goal setting

High scorers

Description

Set objectives around the skills they need to master and measure progress regularly against these objectives.

Typical positive item

I have measured progress against my objectives.

Moderate scorers

Description

Use goal setting to a moderate extent.

Or

Have a general set of goals that they are working towards.

Low scorers

Description

Have not learned how to use goal setting as a performance improvement tool.

Typical negative item

I have failed to prioritize my goals.

Relationships with other scales

Strongest correlations with

Self-talk
Conscientiousness
Self-awareness

Response Style

MD Scale. Impression management

High scorers

Description

Answer questions honestly and self-critically.

Typical positive item

I have been a model athlete.

Moderate scorers

Description

Answer questions as honestly as the average athlete.

Or

Have a reasonably accurate picture of their strengths and weaknesses.

Low scorers

Description

Present a less honest and self-critical assessment of their strengths and weaknesses.

Typical negative item

I have taken advantage of people.

Relationships with other scales

Strongest correlations with

Conscientiousness
Empathy
Managing pressure

4.0 Interpretation and Feedback Report

This chapter describes how the SPQ20 sten scoring system works and explains how the SPQ20 computer-generated feedback report is constructed.

4.1 Sten scores

The SPQ20 uses the Standard Ten (sten) scoring approach. To help professional users and athletes understand what different sten scores mean, the SPQ20 interpretive model breaks the sten range into five categories. The meaning of each of the categories is defined using Red Amber Green (RAG) traffic light assessment ratings and descriptions of mental skills level and development implications (Table 3).

The table below illustrates the approach, for example:

- A sten score of 8 appearing in the green area of the relevant SPQ20 scorecard indicates that the athlete has Level 5 mental skills which they should make the most of / exploit.
- A sten score of 5 appearing in the amber area of the relevant SPQ20 scorecard indicates that the athlete has Level 3 mental skills which they should endeavor to work on.
- A sten score of 4 appearing in the amber red area of the relevant SPQ20 scorecard indicates that the athlete has Level 2 mental skills which they should try to develop.

Table 3. SPQ20 scoring approach

sten Range	RAG Rating	Mental Skill Level	Development
8-10	Green	5 Very high	Capitalize on
7	Amber Green	4 High	Round off
5-6	Amber	3 Average	Work on
4	Amber Red	2 Low	Develop
1-3	Red	1 Very low	Improve

Table 4 shows how an athlete's sten scores relate to percentiles. For example, a sten score of 6 indicates that the athlete's mental skills are more developed than those of about 60% of athletes in the international the comparison group.

Table 4. Relationship between stens and percentiles

sten Score	Higher than
10	99 % of athletes in the comparison group
9	95 % of athletes in the comparison group
8	90 % of athletes in the comparison group
7	75 % of athletes in the comparison group
6	60 % of athletes in the comparison group
5	40 % of athletes in the comparison group
4	25 % of athletes in the comparison group
3	10 % of athletes in the comparison group
2	5 % of athletes in the comparison group
1	1 % of athletes in the comparison group

4.2 Feedback report

The SPQ20 computer-generated feedback report has six sections.

Section 1

Gives a brief introduction to the questionnaire explaining what the instrument measures and how the scoring system works.

Section 2

Provides concise descriptions of what each of the twenty SPQ20 scales measure.

Section 3

Provides an executive summary of the results of the assessment covering seven areas: Overall Mental Skills, Leadership Potential, Achievement and Competitiveness, Confidence and Resilience, Interaction and Sportsmanship, Power and Aggressiveness, and Response Style.

Section 4

Assesses the athlete's overall mental skills by classifying athletes into four groups or styles shown on a matrix with axes of Confidence and Resilience and Achievement and Competitiveness. These two factors measure the athlete's current level of confidence and self-belief, and how driven they are to achieve and win. The four styles are Confident Achiever, Tense Achiever, Easygoing Contestant and Tense Contestant.

This mental skills' matrix provides a visual summary of an athlete's mental toughness and what they need to do and how far they need to travel to become a Confident Achiever. Figure 2 illustrates the approach for an athlete who comes out as a borderline Tense Contestant.

This section also contains two scorecards showing the athlete's overall factor scores and their scores on the scales that make up the two factors. The overall factor scores are the averages of the scale scores.

Figure 3 illustrates a completed scorecard for the Achievement and Competitiveness factor. Below each scorecard, there are short narrative descriptions of the athlete's position on the factor and the scales that contribute to the factor. There are five categories of interpretive description linked to the five sten ranges/traffic light assessments in the profile chart.

Section 5

Measures team leadership/captaincy potential by classifying athletes into four groups shown on axes of Power and Aggressiveness, and Interaction and Sportsmanship. These factors measure an athlete's interest in having power and control over people and their interest in forming relationships, working cooperatively, and acting ethically. The four styles are Democratic Captain, Controlling Captain, Team Player and Individual Player. Like the previous section, this section contains two scorecards showing the athlete's overall factor scores and their scores on the scales that make up the two factors.

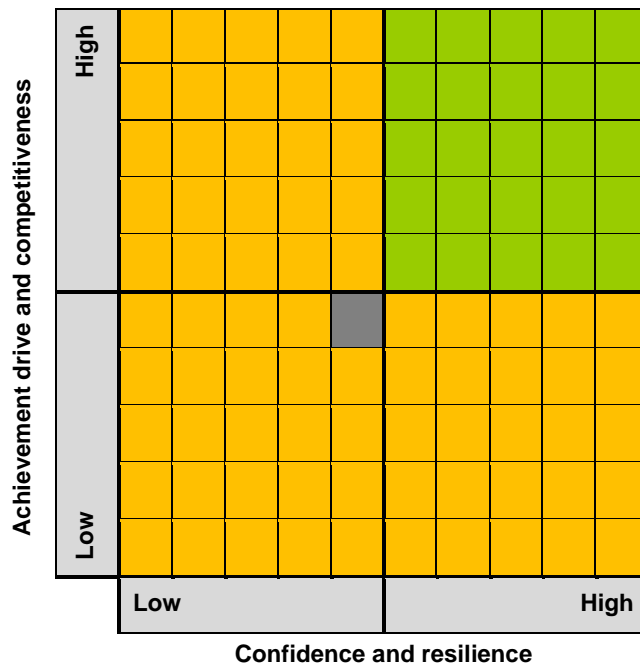
Section 6

Gives guidance on development and access to a downloadable booklet with reading recommendations and practical tips and suggestions for performance improvement (Figure 4).

Figure 2. SPQ20 mental skills matrix

Tense Achiever. Athletes in the upper-left part of this amber zone excel in motivation to achieve but lack confidence and resilience. They have the drive to work hard to realize their potential, but at the present point in time, they lack self-belief.

Confident Achiever. Athletes located in the upper-right part of this green zone excel in competitiveness and mental resilience. They feel positive about their game, are mentally strong, are motivated to achieve, and have the will to win.



Tense Contestant. Athletes in the lower-left part of this amber zone present as unsure about their abilities and their potential at the present point in time. They need help and support to boost their confidence and motivation.

Easygoing Contestant. Athletes in the lower right part of this amber zone excel in confidence but lack motivation to achieve. They present as sure of themselves and stress-free but they lack the competitive drive to work hard to develop and realize their potential.

Figure 3. SPQ20 achievement and competitiveness scorecard

		Sten									
		1	2	3	4	5	6	7	8	9	10
Achievement					<	...	>				
Adaptability		<	...	>							
Competitiveness		<	...	>							
Conscientiousness						<	...	>			
Visualization						<	...	>			
Intuition								<	...	>	
Goal Setting						<	...	>			
Achievement and competitiveness					<	...	>				
		Improve				Work on			Capitalize on		
Achievement and Competitiveness	Level 3. Your responses to the questionnaire suggest that you put in as much effort and energy as most athletes to achieve success.										
Description of dimensions											
Achievement	Level 3. Your responses indicate that personal achievement is a moderately important driver for you.										
Adaptability	Level 1. You present yourself as rather unadventurous and set in your ways. You are very reluctant to experiment and take risks.										
Competitiveness	Level 1. Your responses indicate that participating is more important to you than winning.										
Conscientiousness	Level 3. You are fairly conscientious and moderately well-organized. You work quite hard to achieve your goals but you maintain a work-life balance.										
Visualization	Level 3. You use imagery and visualization to a moderate extent to help think positively and perform well.										
Intuition	Level 4. More than the average contestant in the comparison group, you let your deep-down inner feelings guide you and you act on your instincts and intuition.										
Goal Setting	Level 3. Your responses indicate that you use goal-setting as much as the average athlete in the comparison group.										

Figure 4. Extract of SPQ20 development suggestions booklet

Achievement
Read <u>Psychology of Champions: How to Win at Sports and Life with the Focus Edge of Super-Athletes</u> by James Barrell and David Ryback
Develop a dream about what you want to achieve in your sport.
Be prepared to work your butt off to achieve success as a professional or amateur athlete.
Get the most out of training and practice by being enthusiastic, determined, and goal-driven.
Review your performance continuously and celebrate successes and good performances.
Show through your behavior and actions that you want to learn, you want to get better, and you are prepared to put the work in.
Adaptability
Read <u>Six Thinking Hats</u> by Edward de Bono
Ask for and be open to advice and support from others – for example, your coach, fellow team mates, sport commentators.
Try out creative thinking techniques such as brainstorming, the six thinking hats, metaphors and stories to help generate imaginative ideas.
Try approaching problems from angles that are as far as possible from the ways you have approached them in the past.
Be willing to adapt your behavior to increase your ability to play well and compete successfully.
Remember that mental and physical skills' improvement takes time, commitment, and consistent effort.
Competitiveness
Read <u>Mind Gym : An Athlete's Guide to Inner Excellence</u> by Gary Mack and David Casstevens.
Analyze your strengths and weaknesses in relation to other athletes and where you need to improve to gain competitive edge.
In competition, focus on performing well rather than winning as focusing on winning will do little to help you win.
Learn to control your explanations for winning and losing - give yourself full credit for your wins and give your opponents credits for their wins.
Enjoy the buzz from competing and performing well in front of others
Believe in your ability and never give up hope.
Conscientiousness
Read <u>The New Toughness Training for Sports: Mental Emotional Physical Conditioning from One of the World's Premier Sports Psychologists</u> by James Loehr
Be prepared to spend most of your time in training and in practice.
Develop specific plans and goals to guide your training and practice and focus on the task in hand.
Prepare yourself thoroughly for competition by developing and rehearsing a competition plan.
When you are going through a difficult patch, stick with it and do your best rather than give up and going through the motions.
Try to consistently deliver more than you are asked to do by your coach or team captain.

5.0 Reliability & Validity

5.1 Internal consistency reliabilities

Table 5 presents internal consistency estimates based on Cronbach's Coefficient Alpha together with raw and sten score SEMs for the SPQ20. The internal consistencies are in the benchmark 0.6 to 0.8 range with a median of 0.72. Overall, the SPQ20 has adequate internal consistency reliability as defined by the EFPA Review Model.

The sten score SEMs range from 0.84 to 1.31 with a median of 1.08. This indicates that there is a 68% likelihood that the person's true score on one of the scales will about one sten either side of the observed score. There needs to be a difference of two stens between the scores of two athletes on a scale before it can be assumed that there is a reliable difference between them on a scale.

Table 5. Internal consistency reliabilities for the SPQ20 (n = 8,927)

Scale	Alpha	Mean	SD	Raw score SEM	sten score SEM
Competitiveness	0.71	24.18	5.02	2.70	1.18
Aggressiveness	0.75	15.43	5.41	2.71	1.06
Self-Efficacy	0.81	18.52	6.06	2.64	0.95
Flow	0.76	18.53	5.29	2.59	1.08
Achievement	0.77	24.14	5.11	2.45	1.02
Power	0.69	20.54	5.10	2.84	1.07
Conscientiousness	0.76	21.87	5.05	2.47	1.00
Ethics	0.76	19.87	3.84	1.88	0.94
Adaptability	0.65	19.96	4.08	2.41	1.15
Self-Awareness	0.64	20.54	4.56	2.74	1.31
Intuition	0.70	18.77	4.24	2.32	1.11
Relationships	0.63	20.79	4.78	2.91	1.17
Empathy	0.65	19.41	4.41	2.61	1.18
Emotions	0.72	19.22	5.28	2.79	1.12
Managing Pressure	0.82	16.80	6.28	2.66	0.84
Fear of Failure	0.82	13.95	6.56	2.78	0.87
Burnout	0.70	12.24	5.13	2.81	1.09
Self-Talk	0.77	22.71	5.43	2.60	1.08
Visualization	0.75	19.56	5.62	2.81	0.93
Goal Setting	0.71	20.56	4.75	2.56	1.14
Impression management	0.68	20.01	4.26	2.41	1.11
Median	0.72	19.87	5.10	2.64	1.08

5.2 Scale intercorrelations

Intercorrelations indicate how closely related or independent the SPQ20 scales are. This helps interpretation and throws light on construct validity. Table 6 shows the intercorrelations of the SPQ20 scales. The correlations for the SPQ20 range from -0.31 to 0.77 with three quarters of the intercorrelations falling between -0.31 and 0.49. This indicates a reasonable degree of independence between the scales. The strongest correlations are between scales that make up the statistical factors (section 5.5).

5.3 Intercorrelations and reliability

In order to determine how well a personality assessment instrument differentiates between the different dimensions it is designed to measure, it is necessary to correct the correlations for unreliability. A correlation needs to be divided by the square root of the product of the two variables' reliability to determine what the correlation between the two variables would be if the variables' reliabilities were perfect. If two scales share less than 50% reliable variance, then we can be reasonably certain that they are independent.

Table 7 shows the percentage of common reliable variance for the SPQ20 scales. Seventy six percent of the SPQ20 primary scale pairs share less than 50% common variance indicating that the scales show a fair degree of independence.

5.4 Standard error of difference

The Standard Error of Difference (SEd) helps determine the size of the gap that you need to see between a person's scores on any two scales before you can conclude that the difference is real. The SEd depends on the reliability of the scales – the higher the reliability the smaller the SEd is. If there are two full SEds between the scores on two scales, then there is a 95% likelihood that there is a real difference.

Table 8 shows the SEds for the SPQ20. The median SEd for the SPQ20 primary scales is 1.51 indicating that a difference of 3 stens is likely to indicate a real difference between one scale score and another. In other words, you need to see a difference of 3 stens (depending on the scales in question) before you can say that an athlete has more mental skills in one area than another. For example, looking at Table 8, you can see that a difference of 3 stens or more is a strong indication that an athlete makes more use of self-talk than visualization.

Table 6. Scale intercorrelations for the SPQ20 (n = 8,927)

Scale	Competitiveness	Aggressiveness	Self-Efficacy	Flow	Achievement	Power	Conscientiousness	Ethics	Adaptability	Self-Awareness	Intuition	Relationships	Empathy	Emotions	Managing Pressure	Fear of Failure	Burnout	Self-Talk	Visualization	Goal Setting
Competitiveness	1.00	0.15	0.56	0.57	0.71	0.49	0.61	0.15	0.47	0.49	0.47	0.43	0.39	0.40	0.32	0.47	0.48	0.65	0.49	0.51
Aggressiveness		1.00	0.08	0.17	0.07	0.32	-0.04	-0.24	0.05	0.01	0.06	0.05	-0.31	-0.12	0.10	0.04	0.04	0.10	0.01	0.04
Self-Efficacy			1.00	0.75	0.49	0.40	0.59	0.11	0.33	0.53	0.53	0.38	0.25	0.61	0.60	0.77	0.63	0.67	0.50	0.47
Flow				1.00	0.51	0.41	0.57	0.09	0.30	0.57	0.47	0.43	0.22	0.61	0.54	0.63	0.61	0.65	0.46	0.52
Achievement					1.00	0.42	0.77	0.19	0.49	0.52	0.45	0.38	0.47	0.38	0.25	0.42	0.47	0.63	0.44	0.58
Power						1.00	0.33	0.04	0.31	0.35	0.30	0.41	0.10	0.27	0.29	0.31	0.32	0.46	0.28	0.39
Conscientiousness							1.00	0.25	0.43	0.56	0.47	0.37	0.49	0.48	0.34	0.53	0.57	0.62	0.45	0.59
Ethics								1.00	0.06	0.30	0.09	0.20	0.41	0.27	0.08	0.12	0.26	0.23	0.11	0.19
Adaptability									1.00	0.35	0.37	0.26	0.32	0.23	0.15	0.31	0.27	0.38	0.40	0.38
Self-Awareness										1.00	0.42	0.46	0.42	0.59	0.39	0.49	0.57	0.60	0.44	0.58
Intuition											1.00	0.27	0.30	0.36	0.29	0.47	0.36	0.44	0.50	0.38
Relationships												1.00	0.40	0.44	0.29	0.35	0.47	0.46	0.25	0.39
Empathy													1.00	0.36	0.05	0.23	0.31	0.35	0.31	0.34
Emotions														1.00	0.52	0.55	0.63	0.59	0.44	0.47
Managing Pressure															1.00	0.60	0.53	0.46	0.29	0.33
Fear of Failure																1.00	0.62	0.60	0.42	0.42
Burnout																	1.00	0.66	0.36	0.54
Self-Talk																		1.00	0.49	0.61
Visualization																			1.00	0.46
Goal Setting																				1.00

Table 7. Percentage of common reliable variance for SPQ20 scales (n =8,927)

Scale	Aggressiveness	Self-Efficacy	Flow	Achievement	Power	Conscientiousness	Ethics	Adaptability	Self-Awareness	Intuition	Relationships	Empathy	Emotions	Managing Pressure	Fear of Failure	Burnout	Self-Talk	Visualization	Goal Setting
Competitiveness	4	55	60	92	49	69	4	48	53	44	41	33	31	18	38	46	77	45	52
Aggressiveness		1	5	1	20	0	10	1	0	1	1	20	3	2	0	0	2	0	0
Self-Efficacy			91	38	29	57	2	21	54	50	28	12	64	54	89	70	72	41	38
Flow				44	32	56	1	18	67	42	39	10	68	47	64	70	72	37	50
Achievement					33	101	6	48	55	38	30	44	26	10	28	41	67	34	62
Power						21	0	21	28	19	39	2	15	15	17	21	40	15	31
Conscientiousness							11	37	64	42	29	49	42	19	45	61	66	36	65
Ethics								1	19	2	8	34	13	1	2	13	9	2	7
Adaptability									29	30	17	24	11	4	18	16	29	33	31
Self-Awareness										39	52	42	76	29	46	73	73	40	74
Intuition											17	20	26	15	38	23	36	48	29
Relationships												39	43	16	24	50	44	13	34
Empathy													28	0	10	21	24	20	25
Emotions														46	51	79	63	36	43
Managing Pressure															54	49	34	14	19
Fear of Failure																67	57	29	30
Burnout																	81	25	59
Self-Talk																		42	68
Visualization																			40

Table 8. SEd of SPQ20 scales (n = 8,927)

Scale	Aggressiveness	Self-Efficacy	Flow	Achievement	Power	Conscientiousness	Ethics	Adaptability	Self-Awareness	Intuition	Relationships	Empathy	Emotions	Managing Pressure	Fear of Failure	Burnout	Self-Talk	Visualization	Goal Setting
Competitiveness	1.59	1.51	1.60	1.56	1.59	1.55	1.51	1.65	1.76	1.62	1.66	1.67	1.63	1.45	1.47	1.61	1.60	1.50	1.64
Aggressiveness		1.42	1.51	1.47	1.51	1.46	1.42	1.56	1.69	1.53	1.58	1.59	1.54	1.35	1.37	1.52	1.51	1.41	1.56
Self-Efficacy			1.44	1.39	1.43	1.38	1.34	1.49	1.62	1.46	1.51	1.51	1.47	1.27	1.29	1.45	1.44	1.33	1.48
Flow				1.49	1.52	1.47	1.43	1.58	1.70	1.55	1.59	1.60	1.56	1.37	1.39	1.53	1.53	1.43	1.57
Achievement					1.48	1.43	1.39	1.54	1.66	1.51	1.55	1.56	1.51	1.32	1.34	1.49	1.49	1.38	1.53
Power						1.46	1.42	1.57	1.69	1.54	1.59	1.59	1.55	1.36	1.38	1.53	1.52	1.42	1.56
Conscientiousness							1.37	1.52	1.65	1.49	1.54	1.55	1.50	1.31	1.33	1.48	1.47	1.37	1.52
Ethics								1.49	1.61	1.45	1.50	1.51	1.46	1.26	1.28	1.44	1.43	1.32	1.48
Adaptability									1.74	1.60	1.64	1.65	1.61	1.42	1.44	1.58	1.58	1.48	1.62
Self-Awareness										1.72	1.76	1.76	1.72	1.56	1.57	1.70	1.70	1.61	1.74
Intuition											1.61	1.62	1.58	1.39	1.41	1.56	1.55	1.45	1.59
Relationships												1.66	1.62	1.44	1.46	1.60	1.59	1.49	1.63
Empathy													1.63	1.45	1.47	1.61	1.60	1.50	1.64
Emotions														1.40	1.42	1.56	1.56	1.46	1.60
Managing Pressure															1.21	1.38	1.37	1.25	1.42
Fear of Failure																1.39	1.39	1.27	1.43
Burnout																	1.53	1.43	1.58
Self-Talk																		1.43	1.57
Visualization																			1.47

5.5 Factor analysis

Principal components extraction with varimax rotation was performed on the SPQ20 scales on a sample of 8,927 respondents. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.94, well above 0.6 required for a good factor analysis.

Four factors were extracted with eigenvalues of 1 accounting for 67% of the variance. The variables were on the whole well-defined by the factor solution. Communality values were moderate (0.55) to fairly high (0.81) with a median value of 0.71. With a cut-off of 0.45 for the inclusion of a scale in the interpretation of a factor, all the twenty scales loaded on at least one of the four factors. Two of the variables in the solution loaded on more than one factor. These were the Relationships and Empathy scales.

Table 9 shows loadings of variables on factors, communalities, and percents of variance and covariance. Variables are ordered and grouped by size of loading to facilitate interpretation. Loadings under 0.45 (20% of variance) are omitted.

Factor 1 is the first of two big factors made up of 8 scales that we have labeled Confidence and Resilience: Managing Pressure, Self-Efficacy, Fear of Failure, Flow, Burnout, Emotions, Self-Talk, and Self-Awareness. In summary, athletes with high scores on Factor 1:

- manage performance anxiety successfully
- have a positive attitude/strong belief in their own capabilities
- are not afraid of failing
- perform frequently in the zone
- are physically and mentally fit exhibiting no symptoms of burnout
- control their feelings and emotions
- talk positively to themselves
- are aware of their strengths and improvement areas

Factor 2 is the second big factor made up of 7 scales covering personality traits and performance enhancement techniques that we have labeled Achievement Drive and Competitiveness: Achievement, Adaptability, Competitiveness, Conscientiousness, Visualization, Intuition and Goal Setting. Athletes with high scores on Factor 2:

- are motivated to achieve
- adapt well to new situations and changing circumstances
- compete to win
- are conscientious and organized
- use their instincts and intuition
- are considerate to their fellow players
- use visualization and goal setting techniques

Factor 3 is the first of two small factors that we are calling Interaction and Sportsmanship. It is based on 3 scales: Ethics, Empathy and Relationships. Athletes with high scores on Factor 3 behave ethically and are considerate to and build relationships with others.

Factor 4 is the second of two small factors that we are calling Power and Aggressiveness. It is based on 3 scales: Aggressiveness, Power, and Relationships. Athletes with high scores on Factor 4 enjoy having control over people, play aggressively but also build relationships with fellow competitors and team players.

5.6 Relationship to other measures

In order to assess whether the SPQ20 measures the constructs it is designed to measure, we correlated SPQ scale scores with marker variables from the International Personality Item Pool (2001) in a sample of 725 respondents. Sixty six percent of the respondents were men and 34 percent were women. Respondents were aged 16-65. The mean age of the sample was 25.7 with a standard deviation of 11.4.

Table 10 shows the relationships between these marker variables and the SPQ20 scales. The correlations between the SPQ20 scales and the marker variables are in the range of -0.70 to 0.73 with a median correlation of 0.60 suggesting that the SPQ20 trait scales are measuring similar constructs to the IPIP variables.

5.7 Correlations with athletic performance

A sample of 215 athletes was asked to assess their performance on a 4-point scale from "Excellent" to "Not satisfactory" and report their coach's assessment using the same scale. Sixty four percent were men and 36 percent were women. Respondents were aged 16-65. The mean age of the sample was 26.3 with a standard deviation of 11.5. Over 80 percent of respondents described themselves as white.

Table 11 shows the correlations between the SPQ20 scales and reported athletic performance for the self-assessments, coach assessments and a combined assessment (the sum of the two variables). The median correlations ranged from 0.22 to 0.29. The reported coach assessments were slightly lower than the self-assessments ($r = 0.61$).

Using the combined assessment, there are statistically significant correlations at the 0.01 level in 18 scales. The highest correlations at 0.30 or above in absolute magnitude were with: Flow, Self-Efficacy, Burnout, Managing Pressure, Self-Talk, Goal Setting, Fear of Failure, Visualization, Emotions and Self-Awareness.

Table 9. Rotated matrix for SPQ20 scales using principal components extraction, varimax rotation (n = 8,927)

Scale	F ₁	F ₂	F ₃	F ₄	Communality
Managing Pressure	0.82				0.69
Self-Efficacy	0.80				0.81
Fear of Failure	0.80				0.75
Flow	0.73				0.73
Burnout	0.72				0.71
Emotions	0.72				0.70
Self-Talk	0.59				0.72
Self-Awareness	0.49				0.62
Achievement		0.77			0.76
Adaptability		0.73			0.55
Competitiveness		0.69			0.71
Conscientiousness		0.67			0.71
Visualization		0.67			0.56
Intuition		0.64			0.55
Goal Setting		0.47			0.55
Ethics			0.76		0.59
Empathy		0.51	0.65		0.71
Relationships			0.52	0.46	0.60
Aggressiveness				0.73	0.72
Power				0.73	0.67
Percent of variance	44.74	9.23	7.89	5.27	
Percent of covariance	66.65	13.75	11.75	7.85	

Table 10. Correlations between SPQ20 scales and IPIP marker variables (n =725)

Scale	r	Marker	Ref
Competitiveness	0.62	Like to compete and do everything I can to win	S30
Aggressiveness	0.52	Like to start fights	V127
Self-Efficacy	0.67	Believe that I am important	H740
Flow	0.70	Can stay focused on tasks, even when I'm happy and excited about an upcoming event	D50
Achievement	0.68	Seek to be the best	H276
Power	-0.62	Am not good at taking charge of a group	V105
Conscientiousness	0.64	Am always prepared	X87
Ethics	-0.40	Believe that the end justifies the means	H433
Adaptability	0.48	Am open to ideas	H1142
Self-Awareness	0.60	Always know why I do things	P433
Intuition	0.63	Follow my instincts	H1371
Relationships	0.65	Talk a lot	R11
Empathy	0.52	Appreciate the viewpoints of others	H1340
Emotions	0.63	Can control my emotions	V137
Managing Pressure	0.73	Am calm even in tense situations	E64
Fear of Failure	0.70	Expect things to fail	H645
Burnout	0.56	Accomplish a lot of work	H554
Self-Talk	-0.62	Give up easily	H1144
Visualization	-0.70	Have difficulty imagining things	H1382
Goal Setting	0.59	Am a goal-oriented person	V108
Impression management	0.56	Take advantage of others	H427
Median	0.60		

Table 11. Correlations between SPQ20 scales and athletic performance (n = 215)

Scale	Self-Assessment	Coach Assessment	Combined
Competitiveness	0.25**	0.22**	0.25**
Aggressiveness	0.24**	0.14	0.21**
Self-Efficacy	0.39**	0.31**	0.41**
Flow	0.41**	0.34**	0.42**
Achievement	0.21**	0.31**	0.28**
Power	0.28**	0.21**	0.29**
Conscientiousness	0.17*	0.32**	0.28**
Ethics	-0.14*	0.03	-0.05
Adaptability	0.10	0.22**	0.20**
Self-Awareness	0.24**	0.29**	0.30**
Intuition	0.17*	0.17*	0.19**
Relationships	0.21**	0.23**	0.26**
Empathy	-0.11	0.05	-0.02
Emotions	0.25**	0.21**	0.30**
Managing Pressure	0.37**	0.27**	0.37**
Fear of Failure	0.29**	0.21**	0.30**
Burnout	0.33**	0.36**	0.41**
Self-Talk	0.29**	0.26**	0.32**
Visualization	0.26**	0.21**	0.30**
Goal Setting	0.24**	0.30**	0.31**
Impression Management	-0.04	0.12	0.05
Median	0.24**	0.22**	0.29**

** Significant at 0.01 level, * Significant at 0.05 level (2-tailed)

Table 12. Adjustments to SPQ20 scale scores for response style (n = 8,927)

Scale	High Scorers	Low Scorers
Competitiveness	-1	1
Aggressiveness	0	0
Self-Efficacy	-1	1
Flow	-1	1
Achievement	-1	2
Power	0	0
Conscientiousness	-1	2
Ethics	-1	1
Adaptability	-1	1
Self-Awareness	-1	1
Intuition	-1	1
Relationships	-1	1
Empathy	-1	2
Emotions	-1	1
Managing Pressure	-1	0
Fear of Failure	-1	1
Burnout	-1	1
Self-Talk	-1	1
Visualization	-1	1
Goal Setting	-1	1

5.8 Response style

The impact of response style on scores was analyzed by comparing the results of test takers with high and low impression management scores – that is sten scores of 8 to 10 and sten scores of 1 to 3. This revealed that there were statistically significant differences related to response style in average scale scores on nearly all the scales. These differences were used to make adjustments to the scores in the SPQ20 computer-generated report (Table 12).

5.9 Demographics and SPQ20 scales

Table 13 shows the influence that age and sex have on the SPQ20 test scores. There are statistically significant correlations between age and test scores in 14 scales but all but one of these are below 0.20 in absolute magnitude. Ethics correlates strongest with age at $r = 0.21$ showing that older athletes tend to be more concerned about ethical behavior in sport. Older athletes also tend to be slightly less competitive, aggressive and outgoing.

There are statistically significant correlations between gender and test scores in 15 scales but the observed gender differences are again very small. The strongest correlations are with Empathy ($r = 0.22$) and Aggressiveness ($r = -0.20$). Female athletes tend to show more empathy and consideration towards their fellow athletes and males tend to perform in a more aggressive manner.

These findings indicate that there is no need for separate norms for athletes in different age groups and that it is appropriate to use combined sex norms.

Table 13. Correlations of age and sex with SPQ20 scales (n = 8,927)

Scale	Age	Gender
Competitiveness	-0.11**	-0.02
Aggressiveness	-0.13**	-0.20**
Self-Efficacy	0.04**	-0.06**
Flow	-0.08**	0.01
Achievement	-0.07**	0.05**
Power	-0.07**	-0.10**
Conscientiousness	-0.01	0.08**
Ethics	0.21**	0.09**
Adaptability	0.04**	-0.02
Self-Awareness	-0.01	0.08**
Intuition	0.06**	0.02
Relationships	-0.11**	0.09**
Empathy	0.06**	0.22**
Emotions	0.00	0.05**
Managing Pressure	0.01	-0.13**
Fear of Failure	0.09**	-0.09**
Burnout	0.01	0.00
Self-Talk	-0.02	-0.04**
Visualization	0.07**	0.01
Goal Setting	-0.02	0.08**
Impression Management	0.10**	0.14**

** Significant at 0.01 level, * Significant at 0.05 level (2-tailed). Gender was coded 1 for male and 2 for female.

6.0 Norms

The comparison group was created from an international sample of just under 10,000 athletes who completed the online assessment at the website www.sportsconfidence.biz between 2003 and 2010. Respondents aged under 16 or over 65 were deleted from the sample. Duplicate cases were also identified and deleted. This left a sample of 8,927 athletes.

The age and gender distribution of the sample is shown in Table 14. Sixty five percent were men and thirty five percent were women. Fifty three percent were aged up to 20, 24% were aged 21-30, 11% were aged 31-40 and the remaining 12% were over 40.

Table 14. Age and gender characteristics of SPQ20 comparison group (n = 8,927)

Gender	up to 20	21-30	31-40	41-50	51-60	over 60	Total
Women	1839	722	301	179	76	22	3139
% of total	20.60%	8.09%	3.37%	2.01%	0.85%	0.25%	35.16%
Men	2906	1380	718	509	207	68	5788
% of total	32.55%	15.46%	8.04%	5.70%	2.32%	0.76%	64.84%
Total	4745	2102	1019	688	283	90	8927
% of total	53.15%	23.55%	11.41%	7.71%	3.17%	1.01%	100.00%

Table 15 shows that over two thirds of respondents were from the United Kingdom (38%) and the United States (34%), and about one fifth of respondents were from Canada (12%) and Australia (7%).

Table 16 provides norms for the SPQ20 scales using the Standard Ten (sten) scoring approach and Table 17 provides percentiles for the scales.

Table 15. Country of origin of respondents in SPQ20 comparison group (n = 8,927)

Country	n	Percent
United Kingdom	3445	38.59%
United States	3069	34.38%
Australia	1064	11.91%
Canada	641	7.18%
New Zealand	258	2.89%
India	125	1.40%
Ireland	106	1.19%
Malaysia	82	0.92%
Philippines	74	0.83%
South Africa	64	0.71%
Total	8927	100.00%

Table 16. SPQ20 general athlete norms (n = 8,927)

Scale	sten										Scale	Mean	SD
	1	2	3	4	5	6	7	8	9	10			
Competitiveness	0-12	13-15	16-18	19-21	22-24	25-26	27-28	29-30	31	32	Competitiveness	24.18	5.02
Aggressiveness	0-4	5-6	7-9	10-12	13-15	16-17	18-20	21-23	24-26	27-32	Aggressiveness	15.43	5.41
Self-Efficacy	0-5	6-8	9-11	12-15	16-18	19-21	22-24	25-26	27-28	29-32	Self-Efficacy	18.52	6.06
Flow	0-7	8-9	10-12	13-15	16-18	19-20	21-23	24-25	26-27	28-32	Flow	18.53	5.29
Achievement	0-12	13-15	16-17	18-21	22-24	25-26	27-28	29-30	31	32	Achievement	24.14	5.11
Power	0-9	10-12	13-15	16-17	18-20	21-22	23-25	26-27	28-29	30-32	Power	20.54	5.10
Conscientiousness	0-10	11-13	14-15	16-18	19-21	22-24	25-26	27-28	29-30	31-32	Conscientiousness	21.87	5.05
Ethics	0-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-32	Ethics	19.87	3.84
Adaptability	0-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-32	Adaptability	19.96	4.08
Self-Awareness	0-10	11-13	14-15	16-17	18-20	21-22	23-24	25-26	27-28	29-32	Self-Awareness	20.54	4.56
Intuition	0-9	10-12	13-14	15-16	17-18	19-20	21-22	23-24	25-27	28-32	Intuition	18.77	4.24
Relationships	0-9	10-13	14-15	16-17	18-20	21-22	23-25	26-27	28	29-32	Relationships	20.79	4.78
Empathy	0-12	13-14	15-16	17-19	20-21	22-24	25	26-27	28-29	30-32	Empathy	19.41	4.41
Emotions	0-7	8-10	11-13	14-15	16-18	19-21	22-24	25-26	27-28	29-32	Emotions	19.22	5.28
Managing Pressure	0-4	5-6	7-9	10-13	14-15	16-19	20-22	23-26	27-29	30-32	Managing Pressure	16.80	6.28
Fear of Failure	0-1	2-3	4-6	7-9	10-13	14-16	17-20	21-23	24-26	27-32	Fear of Failure	13.95	6.56
Burnout	0-2	3-4	5-6	7-8	9-11	12-14	15-16	17-19	20-22	23-32	Burnout	12.24	5.13
Self-Talk	0-10	11-13	14-15	16-19	20-22	23-25	26-27	28-29	30-31	32	Self-Talk	22.71	5.43
Visualization	0-9	10-12	13-15	16-17	18-20	21-23	24-25	26-28	29	30-32	Visualization	19.56	5.62
Goal Setting	0-10	11-13	14-15	16-17	18-19	20-22	23-25	26-27	28-29	30-32	Goal Setting	20.56	4.75
Impression Management	0-10	11-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-32	Impression Management	20.01	4.26

Table 17. Percentiles for SPQ20 scales (n = 8,927)

Raw score	Competitiveness	Aggressiveness	Self-Efficacy	Flow	Achievement	Power	Conscientiousness	Ethics	Adaptability	Self-Awareness	Intuition	Relationships	Empathy	Emotions	Managing Pressure	Fear of Failure	Burnout	Self-Talk	Visualization	Goal Setting	Impression Management
0																					
1															1						
2		1	1												2	1					
3		1	1												4	1					
4		2	1	1											5	2					
5		3	2	1										1	7	4					
6		5	3	1										1	9	5	1				
7		7	4	2		1					1	1		2	12	7	1		1		
8		10	6	3		1	1			1	1	1		3	16	9	2	1	1	1	1
9	1	14	9	5		2	1		1	1	2	2		4	19	10	3	1	2	1	1
10	1	18	11	8	1	3	2	1	1	2	2	2	1	6	23	13	4	2	3	1	1
11	1	24	14	10	1	4	3	1	2	2	4	3	1	8	28	16	6	2	4	2	2
12	2	30	17	14	2	6	4	3	3	4	6	5	2	10	32	20	8	4	6	4	4
13	3	36	20	17	2	8	6	4	5	6	9	6	3	13	38	24	11	5	8	6	6
14	4	42	25	21	4	11	7	7	8	9	14	9	5	17	44	29	15	7	11	9	9
15	5	50	29	26	5	15	10	11	12	13	20	13	7	22	49	33	19	10	15	13	14
16	11	60	37	35	11	23	17	20	21	21	31	20	13	31	59	42	28	16	24	21	22
17	13	67	43	42	13	29	21	27	28	27	39	25	17	37	65	48	34	20	29	28	28
18	16	73	49	48	16	35	26	35	37	34	49	31	22	44	71	53	40	24	36	35	36
19	19	79	54	55	20	42	31	45	46	41	58	38	28	51	75	58	47	29	43	44	45
20	23	83	59	62	24	50	37	56	56	49	67	46	34	58	80	63	54	34	49	51	54

21	27	87	66	69	28	56	44	66	65	57	75	53	42	65	84	68	61	39	56	58	63
22	32	90	71	76	34	63	51	75	73	65	81	61	51	72	87	73	68	44	63	66	71
23	39	92	77	82	40	70	59	82	80	73	87	69	60	78	90	78	75	51	69	72	79
24	46	94	83	87	47	77	67	88	86	80	91	77	69	84	93	82	81	58	75	78	85
25	54	96	87	92	55	83	74	92	91	85	94	83	77	88	95	86	87	65	80	84	90
26	62	97	91	94	63	87	81	95	94	91	96	88	84	92	96	89	90	72	85	88	94
27	70	98	94	96	70	91	87	97	97	94	98	93	90	95	98	92	94	79	89	92	97
28	78	99	97	98	78	94	91	99	98	97	99	96	94	97	99	95	97	85	93	95	98
29	86		98	99	85	96	95		99	98	99	98	97	98	99	97	98	90	96	97	99
30	93		99		91	98	98			99		99	99	99		98	99	94	98	98	
31	99				96	99	99									99		97	99	99	
32					99													99			

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