The FLOW Manual

The Manual for the Flow Scales

Manual, Sampler Set

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Contents

Chapter 1: The flow construct

a) Definitions and characterization of flow

As an optimal psychological state, flow represents those moments when everything comes together for the performer. Flow is often associated with high levels of performance and is a positive psychological experience. Csikszentmihalyi (1975) developed the concept after investigating the experiences of individuals during times when everything came together during performance of one's chosen activity. The types of activities investigated were diverse, ranging from surgery, to dancing, to chess, and rock climbing. Despite such diversity in setting, there was considerable consistency of responses regarding what was felt during moments that stood out as being special in some way for the performer.

Since his initial investigations where the term "flow" was chosen to denote these special absorbing experiences, Csikszentmihalyi (e.g., 1990, 1997) has continued a research program examining this experience. Flow has been examined in daily living (Csikszentmihalyi, 1997) and as a state of mind in scientific discoveries (Csikszentmihalyi, 1996). There has been remarkable consistency in how flow has been described by individuals across diverse settings. Flow is a special psychological state, one that brings the recipient much enjoyment.

Flow occurs when one is totally involved in the task at hand. It can occur at different levels of complexity but, by definition, flow is intrinsically rewarding, regardless of whether it involves a simple game of throw and catch or a complicated and dangerous gymnastics routine. Csikszentmihalyi (1975) described the different levels of flow as micro and macro flow experiences. Micro flow experiences were proposed to fit the patterns of everyday life, whereas macro flow was reserved for experiences associated with higher levels of complexity and demand on the participant. When in flow, one feels strong and positive, not worried about self or of failure. Flow can be defined as an experience that stands out as being better than average in some way, where the individual is totally absorbed in what she or he is doing, and where the experience is very rewarding in and of itself (Jackson, 1993). This definition covers several characteristics of flow.

Csikszentmihalyi's (1990) concept of challenge-skill balance is crucial to the definition of flow. Flow occurs only when the individual moves beyond his or her average experience of challenge and skill. The moving beyond average signifies an investment of psychic energy into a task, which is also a pre-requisite to flow. The challenge-skills balance concept is best described graphically, and thus a model of flow is presented below in Figure 1. When the perceived challenges are matched by a belief in having the skills to meet the challenge, the stage is set for flow to occur.

The challenge-skill balance model of flow provides an understanding of a range of psychological experiences in addition to flow. It can be seen in Figure 1 that when challenges outweigh skills, anxiety is predicted. Conversely, when skills outweigh challenges, relaxation, closely followed by boredom, is predicted. An absence of significant challenge or skill requirements in a situation brings on a state of apathy.

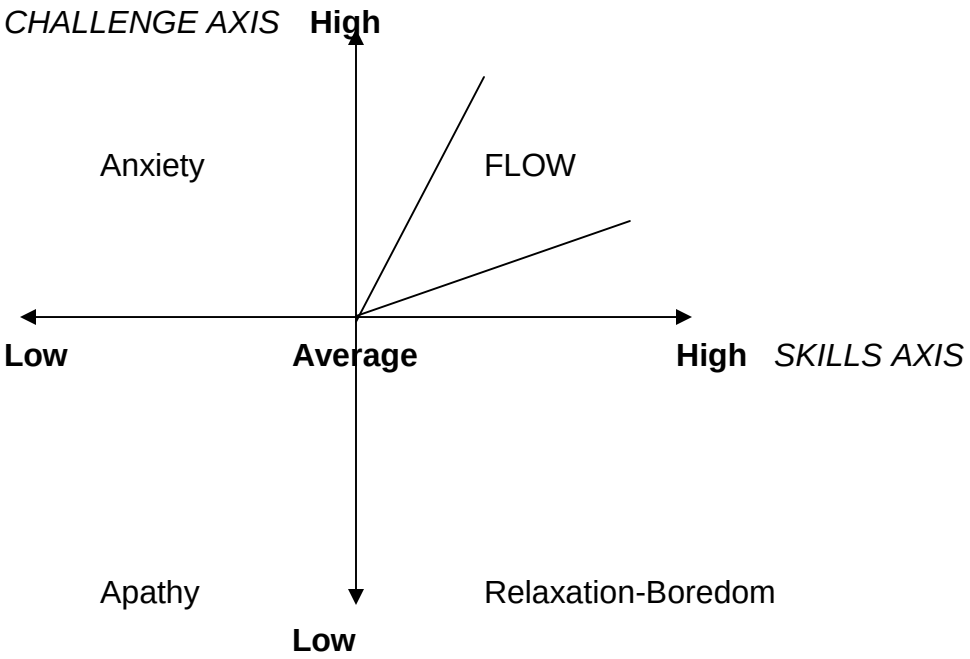

Figure 1. Model of the flow state. Adapted, with permission, from S.A. Jackson, S.A., & M. Csikszentmihalyi, 1999. *Flow in sports: The keys to optimal experiences and performances.* (Champaign, IL: Human Kinetics), p. 37. Adapted from M. Csikszentmihalyi and I.Csikszentmihalyi, 1988, Optimal experience: Psychological studies of flow in consciousness (Cambridge: Cambridge University Press).

Understanding how flow relates to other psychological constructs such as anxiety, and confidence, was an important consideration in developing the flow scales. Referring back to the challenge-skill balance model of flow, flow represents optimal experience, and Csikszentmihalyi (1990) uses these two terms interchangeably. We consider the study of optimal experiences to be as important as focusing on problems, or negative experiences. The tremendous growth of the positive psychology approach (Seligman & Csikszentmihalyi, 2000) demonstrates considerable support for the significance of understanding positive human experiences. Csikszentmihalyi (1990) provides a compelling argument for why flow experiences are important–they lead to growth and complexity in consciousness.

b) The flow dimensions

The LONG and SHORT Flow scales were theoretically grounded in Csikszentmihalyi's (1990) nine-dimensional conceptualization of flow. These nine dimensions are: challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on task, sense of control, loss of self-consciousness, time transformation, and autotelic experience. Considered together, these dimensions represent the optimal

psychological state of flow; singly they signify conceptual elements of this state. We now define and describe the nine flow dimensions.

***Challenge-skill balance*.**

Challenges can be thought of as opportunities for action, or goals. Skills are the capacities that we possess to produce desired outcomes. Critical to the challenge-skill balance is that the *perception* of challenge and skill drives the equation. This means our beliefs, or confidence regarding what we are able to do in a situation, is more important than what our objective skill levels might be. Challenges can be defined in a personal way, separate from any structures of an activity. It is the perception of the defined challenge that is critical to flow occurring.

When in flow, a dynamic balance exists between challenges and skills. In sports, athletes continually challenge themselves with higher skill demands. The structure of sports and any competitive endeavour provide continual opportunities for extending oneself. For many people, physical activity (be it competitive or recreational) provides one of the most concrete opportunities for setting and striving for personal challenges. Challenges and skills, however, can be modified in any activity, making flow an accessible experience across all domains of functioning.

***Action-awareness merging*.**

When people are asked to describe what it feels like to be in flow, they often refer to this idea of action-awareness merging. Performers describe feeling at one with the activity being performed. How does this experience come about? Through total absorption in what one is doing. Such involvement can lead to perceptions of oneness with the activity that brings harmony and peace to an active engagement with a task.

A sense of effortlessness and spontaneity is associated with the flow dimension of action-awareness merging. Feelings of automaticity are described by performers, whose well-learnt routines enable them to process subconsciously and pay full attention to their actions. The unity of consciousness apparent in this flow dimension illustrates the idea of growth in complexity that results from flow experiences.

***Clear goals*.**

Goal setting is a process that, when undertaken correctly, helps move a performer toward flow. Once in this state, individuals describe knowing clearly what it is they are supposed to do. Such clarity of purpose occurs on a moment-by-moment basis, keeping the performer fully connected to the task and responsive to appropriate cues. Sports provide an excellent setting for actions bound by clear goals and rules. The structure of pre-set action allows more attention to be focused on immediate tasks. Personal goals can also be set and continually monitored against this backdrop of in-built goals for action. In fact, it is vital that athletes plan for their performance so that, when the time comes, there is clarity of focus on the particular goals relevant to individual performers and performances. Goals are a necessary part of achieving something worthwhile in

any endeavor. The focus that goals provide to actions also means that they are an integral component of the flow experience.

Unambiguous feedback.

Closely associated with clear goals is the processing of how performance is progressing in relation to these goals. Paying attention to feedback is a necessary step in determining whether one is on track toward goals that have been set. When in flow, feedback is easier to receive and interpret. The performer receives clear, unambiguous information that he or she processes effortlessly, keeping performance heading in the right direction.

Feedback can come from many sources. For athletes, and others who have a physical component to what they do when in flow, one of the most important sources of feedback is kinaesthetic awareness, or knowing the spatial location of one's body. This awareness is the internal information an athlete needs to optimise his or her movements. Recognizing how the quality of a performance relates to an ideal performance enables athletes to know, on a continuous basis, whether their movements match what they want them to be. Feedback can come from a range of external sources, including the environment in which the performance is occurring, to the information provided by competitors or spectators. It is not necessary for feedback to always be positive for flow to be experienced. When in flow, the nature of clear and immediate feedback means that adjustments can be made to either keep a performer in flow, or enable one to achieve this state. When receiving feedback associated with a flow state, the performer does not need to stop and reflect on how things are progressing. This information is seamlessly integrated into performance in an ongoing way.

Total concentration on the task at hand.

This fifth characteristic defines one of the clearest indications of being in flow: one is totally focused in the present on a specific task being performed. There are no extraneous thoughts, and the distractibility that often accompanies involvement on any task is wonderfully absent. Experiencing such clear moments provides much satisfaction, which in turn leads to the growth in complexity (Csikszentmihalyi, 1990, 1993) resulting from flow experiences.

Being totally connected to the task in which one is engaged epitomizes the flow state. This connectedness relies on a present-centred focus—flow resides in being in the present moment, rather than in the past or future. An interesting aspect of the concentration experienced in flow is that even though it is complete and intense, it is also spontaneous. In contrast to one's usual experience, no effort is required to keep the mind on task when in flow.

Sense of control.

Another frequently mentioned flow characteristic is a feeling of being in control. Some have described a sense of infallibility when performing in flow. This empowering feeling

frees one from the all-too-frequent fear of failure that can creep into performance. Failure thoughts are happily absent during flow, enabling the individual to take on the challenges at hand.

Control, like the challenge-skill relationship, is a delicately balanced component of flow. Although the perception of control is inherent to the experience, absolute situational control does not actually exist. Challenge must be experienced for flow to be experienced. Challenge does not exist under conditions of absolute control. Having the experience of total control is likely to move an individual away from the experience of flow and into relaxation or boredom. It is the possibility of keeping things under control that keeps flow active. Like flow itself, the sense of control often lasts only a short time. This relates back to keeping at the cutting edge of the challenge-skill balance within a situation. If the feeling of being in control keeps going indefinitely, then the scales have tipped in favour of skill over challenge, and flow is lost.

***Loss of self-consciousness*.**

Most people live their lives surrounded by evaluations of how they are doing. Emanating from many sources, one of the most insistent is from the self. In situations of importance, it is difficult to stop constantly evaluating how we are doing in the eyes of others; however, stopping this evaluation is necessary for flow. When an individual is no longer concerned with what others think of them, self-consciousness has been lost.

People who perform publicly often find it difficult to lose self-consciousness. In any activity, we face criticism–both from others and ourselves–which turns attention away from the task and onto the self. The ego, that part of our self that questions, critiques, and prompts self-doubt, needs to be quietened for flow. We can think of flow as unselfconscious action. It is liberating to be free of the voice within our head that questions whether we are living up to self or other-imposed standards.

***Transformation of time*.**

Deep moments of flow seem to transform our perception of time. For some, the experience is that time stops. For others, time seems to slow. Or it may be that time seems to pass more quickly than expected. These sensations come about through the intensity of involvement in flow. Because nothing else is entering our awareness during the intense concentration of flow, we may be surprised to find that significant time has passed while in this state. The intensity of focus may also contribute to perceptions of time slowing, with a feeling of having all the time in the world to execute a move that is in reality time-limited. Thus, there seems to be a close link between depth of concentration and time transformation.

Time transformation may be the least frequently experienced flow dimension. Sport research conducted to date has found lack of a robust association between time transformation and the other flow dimensions. It may be that the nature of the sports activity, where time is often part of the infrastructure or part of the challenge, is not easily lost. Another possible explanation is that this dimension occurs only when the flow experience is very deep (Tenenbaum, Fogarty, & Jackson, 1999). When time

transformation is experienced, it is one of the liberating dimensions of flow–to feel free from the time dependence under which we live most of our lives.

Autotelic experience.

Csikszentmihalyi (1990) coined the term autotelic experience to describe the intrinsically rewarding experience that flow brings to the individual. As described by Csikszentmihalyi, the word is derived from two Greek words that describe doing something for its own sake: “auto” = self, and “telos” = goal. Flow is such an enjoyable experience that once experienced, it becomes a much sought after state. Csikszentmihalyi described this dimension as the end result of the other eight flow dimensions. For many, flow is the defining motivation to keep pushing towards higher limits. Feelings of great enjoyment may come only after a flow performance; during a flow performance, energy is directed fully into the task. Thus, it is generally after completing an activity, upon reflection, that the autotelic aspect of flow is realized and provides high motivation toward further involvement.

The dimensions of flow provide a conceptually coherent framework for understanding optimal experience. Considerable consistency of flow experience has been found across many different domains (see Csikszentmihalyi, 1990, 1997; Csikszentmihalyi & Csikszentmihalyi, 1988). The next section introduces the measurement approach designed by Jackson and colleagues to tap into these flow dimensions.

c) Multidimensional, unidimensional, and core flow

The triad of flow scales developed by Jackson and colleagues (e.g., Jackson & Eklund, 2002; Jackson, Martin, & Eklund, 2008; Martin & Jackson, 2008) provides researchers and practitioners with a suite of scales for assessing flow. The three types of flow scales address the flow construct from different perspectives.

Multidimensional.

The Flow State Scale-2 (FSS-2) and Dispositional Flow Scale-2 (DFS-2) are self-report instruments designed to assess flow experiences from the nine-dimensional flow model. These 36-item, or LONG Flow scales, have been shown over a number of studies to be robust instruments that provide a detailed assessment of the dimensional flow model. When a fine-grained description of flow characteristics according to the dimensional flow model of Csikszentmihalyi (1990) is desired, then the long flow scales are the best option.

Unidimensional.

While the dimensional flow model focuses on the nine flow dimensions, it is only when these dimensions are experienced together that flow is thought to occur. To facilitate a concise assessment of the global flow construct, the SHORT Flow scales were developed. Drawn directly from the LONG scales, the items of the SHORT scales

provide a flow assessment that focuses on a holistic concept of flow as one coherent experience that is drawn from the nine flow dimensions.

***Core*.**

The third approach to assessing flow via self-report is based on the phenomenology, or lived experience, of flow. That is, it is designed to tap into the core experience of being in flow. It is a complementary approach to the dimensional flow model described above. The CORE Flow scales are designed to describe what it is like to be in flow from the perspective of the person in flow.

Chapter 2: Description and forms of the Flow Scales

In this chapter, the three types of Flow Scales are described, as well as the content and intended uses of each instrument. Each of the three types of Flow Scales has a **dispositional** and **state** version. By designing these two versions to each type of scale, it is possible to assess flow in two ways: general tendency to experience flow, as well as particular incidence (or non-incidence) of flow characteristics during a particular event. In accordance with other psychological concepts employing a state-trait distinction, it is proposed that flow is a specific psychological state, amenable to state-based assessments, and also that people differ in their propensity to experience flow on a regular basis (Jackson, Kimiecik, Ford, & Marsh, 1998).

a) FLOW – LONG scales (36-item)

The DFS-2.

This scale was designed as a dispositional assessment of the flow experience. It assesses the general tendency to experience flow characteristics within a particular setting nominated either by the respondent or investigator. There are several reasons for directing respondents to think about the frequency with which they generally experience the flow items within a particular activity. The first is to provide a context for participants' responses and to ground their thinking in a particular setting. Second, the DFS-2 was designed in parallel with the FSS-2, where respondents report flow experience within a particular just completed event. The contextualizing of the DFS-2 enables researchers to compare responses to the same activity across the FSS-2 and DFS-2, and thus examine relationships between state and dispositional factors in experience. Third, it is likely that most investigations using the DFS-2 will focus on activities in which the respondents have invested psychic energy: activities of importance to the respondents, where they are likely to encounter challenge, and for which they have developed some skills. That is, activities conducive to flow experiences.

Through assessing experience in self-choice activities, knowledge of the autotelic personality, and factors that contribute to it, may be advanced. An autotelic person is one who is more able to experience flow, and is described as a personality type by Csikszentmihalyi (e.g., 1990, 1997).

While the DFS-2 is designed for grounding in a particular activity (or type of activity), it should be answered at a time separate from immediate involvement in this activity. As a dispositional measure, the DFS-2 is designed to elicit typical responses, or how the person feels in general about their participation in a chosen activity. As a dispositional measure, the DFS-2 is designed to assess individual differences in the tendency to experience flow in specific activities. According to Csikszentmihalyi (e.g., 1990) people differ in their ability to experience flow, as described by the autotelic personality concept. The DFS-2 was designed to tap into this individual difference aspect to flow. Thus, it is anticipated that responses to this instrument will remain fairly stable over a long time frame.

There are no set time frames in which the respondent is asked to recall his or her experience. However, it is possible to assign a timeframe by adding this to the instructions preceding the scale. For example, you can include in the instructions a statement such as, “Think about your experience in (name of activity) over the past year, and answer the questions in relation to how you have generally felt while participating.” The timeframe most appropriate to specify for respondents may depend on the particular characteristics of the sample; for example, their age, amount of time in the activity, or frequency of participation.

The FSS-2 is designed as a post-event assessment of flow, with instructions worded to ground the respondent in a recently completed activity. By administering the scale close to the conclusion of an activity, a more accurate assessment of the state flow experience is possible.

Another possible use of the FSS-2 is to collect data on particular experiences of significance to the participants. Respondents can be asked to think about a particular experience (for example, a peak experience) and answer the scale in relation to this event. A high-level flow experience, such as one tied into a peak performance or peak experience, will remain a strong memory for the recipient, and thus the FSS-2 can be used to tap into such memorable experiences.

The DFS-2 and/or FSS-2 have been translated into several languages, including Greek (Stavrou & Zervas, 2004), French (Fournier, Gaudreau, Demontrond-Behr, Visioli, Forrest, & Jackson, 2007), Japanese (Kawabata, Mallett, & Jackson, 2007), Finnish (Räty & Laakkonen, personal communication, 2008), Spanish (Martínez-Zaragoza, Benavides, Solanes, Pastor, & Martin del Rio, personal communication, 2008) Hungarian (Bimbo, personal communication, 2009), and Hindi (Singh, personal communication, 2009) versions, with more translations presently underway.

Physical and General versions of LONG Flow.

This manual contains a new version of LONG Flow, which we have named LONG Flow–General, as well as the original DFS-2/FSS-2, which we are calling here LONG Flow–Physical Scales. The General versions of these instruments have minor wording changes to make them adaptable to a wide range of settings. The Long Scales–Physical were developed in sport and performance settings, and several items contain words related to movement and performance. Users intending to assess people who are performing in a sport or other movement-based context should select LONG Flow–Physical. Users intending to assess people whose activity does not involve movement or some sort of physical performance, should use the LONG Flow–General Scales. These are general recommendations, and it is recognised that there may be situations where potential users may prefer to use one instrument over the other. For example, if one’s sample includes both physical and non-physical activities (e.g., assessing flow amongst adolescents on sport, academic, and hobby), then LONG Flow-General, which can also be used for physical-related activities, may be a practical choice. Researchers wanting to compare the results of their participants to the descriptive and normative data included in this manual may prefer to use LONG Flow-Physical, since the quantitative research to date has been conducted with this version of the LONG Flow scales.

LONG Flow Scale Items.

The items used in both versions of the flow scales follow a similar structure but differ in wording according to the tense used: the FSS-2 items use a past tense, whereas the DFS-2 items use a present tense. The scales differ in this way to fit with the context that each version of the scales assesses.

Both the FSS-2 and DFS-2 contain 36 items. There are four items for each of the nine dimensions of flow. Each dimension comprises a subscale of the total scale. An example item from each dimension of the FSS-2 illustrates these scales:

- Challenge-Skill Balance: *"I was challenged, but I believed my skills would allow me to meet the challenge."*
- Action-Awareness Merging: *"I made the correct movements without thinking about trying to do so."*
- Clear Goals: *"I knew clearly what I want to do."*
- Unambiguous Feedback: *"It was really clear to me how my performance was going."*
- Concentration on Task at Hand: *"My attention was focused entirely on what I was doing."*
- Sense of Control: *"I had a sense of control over what I was doing."*
- Transformation of Time: *"The way time passed seemed to be different from normal."*
- Autotelic Experience: *"I really enjoyed the experience."*

The 36 items are designed to tap into the nine flow dimensions described in an earlier section. In formulating the items, the definition of each flow dimension was analysed across several of Csikszentmihalyi's (1975, 1990, 1993) descriptions of the flow dimensions, earlier self-report scales designed to measure flow characteristics (Begly, 1979; Csikszentmihalyi & Csikszentmihalyi, 1988; Privette, 1984; Privette & Bundrick, 1991), and qualitative descriptions of flow from elite athletes (Jackson, 1992, 1995, 1996).

The LONG Flow scales provide the most complete assessment of flow from the three types of scales described in this manual. There are psychometric advantages to longer, multi-dimensional self-report instruments. Nonetheless, practical considerations often dictate the need for shorter, abbreviated versions. For example, during a sports event, athletes and coaches may be willing to complete a 9-item scale, but reluctant to answer a 36-item one. In large-scale projects involving multiple measures, short forms may be preferable to keep a questionnaire to a reasonable size for participants. Or, when a construct is not a central measure of a particular study, it can be reasonably estimated with a short measure. For reasons such as these, Jackson and colleagues (Jackson, Martin, & Eklund, 2008; Martin & Jackson, 2008) developed two short scales to assess flow: the SHORT Flow Scales, and the CORE Flow Scales.

b) FLOW – SHORT scales (9-item)

The SHORT flow scales are abbreviated versions of their longer parent forms, the FSS-2 and DFS-2. Both the SHORT Flow State Scale-2 and the SHORT Dispositional Flow Scale-2 contain nine items, with each item representing one of the nine flow dimensions. The rating scales of the short scale are the same as those used in LONG Flow. The short scales provide a succinct measure of the higher-order dimensional flow model described in confirmatory factor analytic research with the 36-item scales. Initial psychometric support for the SHORT Flow Scales is promising, although these are new scales, and so further research is needed to examine their measurement properties. Both dispositional and state forms have demonstrated good internal consistency (Jackson & Martin, 2008; Martin et al., 2008). The SHORT Dispositional Flow Scale-2 has demonstrated robust CFA results across research with participants from sport, work, school, and music (Jackson & Martin, 2008; Martin et al., 2008). The CFA values for the SHORT Flow State Scale-2 are somewhat weaker, although fewer analyses have been undertaken to date with this version of short flow (Jackson & Martin, 2008), and in the research that has been conducted, better values have been obtained with sport-specific versus pooled samples. From this finding, Jackson and Martin concluded that the more situationally-sensitive state measures may work better from a psychometric standpoint when used in specific contexts.

c) FLOW – CORE scales (10-item)

While the SHORT Flow Scales were designed as abbreviated versions of the 36-item (LONG) Flow Scales, the rationale behind the CORE flow scales was different. The aim here was to devise a succinct way of assessing the phenomenological experience of flow. The CORE scales contain 10-items that are descriptions of what it feels like to be in flow during a target activity. The items comprising the CORE Flow scales were derived from qualitative research with elite athletes, describing what being in flow felt like (Jackson, 1992, 1995, 1996). Expressions used by elite athletes to describe what it is like to be in flow were adapted into short statements that scale respondents are asked to rate on similar rating scales to the other flow scales. Model fit and reliability for the CORE scales have been promising in the initial research conducted with these scales (Martin & Jackson, 2008).

Chapter 3: Procedures for administering and scoring the Flow Scales

a) Administering Dispositional Flow Scales

The suggested instructions for answering the dispositional versions of the Flow scales are as follows:

"Please answer the following questions in relation to your experience in your chosen activity. These questions relate to thoughts and feelings you may experience during participation in your activity. You may experience these characteristics some of the time, all of the time, or none of the time. There are no right or wrong answers. Think about how often your experience each characteristic during your activity, then circle the number that best matches your experience."

In order to focus the respondent on one selected activity when answering the scale, the following lead-in statement is included with these instructions: "When participating in (name activity). . ."

The dispositional scales are rated on a 5-point Likert scale, ranging from "1" (never) to "5" (always). The premise for using this type of assessment is that people who report more frequent occurrence of flow characteristics possess a greater predisposition towards experiencing flow.

b) Administering State Flow Scales

The suggested instructions for the state versions of flow are as follows:

"Please answer the following questions in relation to your experience in the event or activity just completed. These questions relate to thoughts and feelings you may have experienced while taking part. There are no right or wrong answers. Think about how you felt during the event or activity and answer the questions using the rating scale below. For each question, circle the number that best matches your experience."

The lead-in statement, "During the event of (name event)," follows these instructions, in order to focus respondents on the just completed activity. The state scales are rated on a 5-point Likert scale, ranging from "1" (strongly disagree) to "5" (strongly agree). Respondents are asked to indicate their extent of agreement with each of the flow descriptors, in relation to activity that has just been completed. The state scales should be administered as close as possible to the completion of the activity being assessed, to promote clear recall. It is recommended that responses to the state scales be collected within approximately one hour of completion of an activity.

c) Scoring LONG flow

There are four items for each of nine flow dimensions represented in the LONG Flow scales. Total the item scores for each dimension, and then divide by four, to obtain flow dimension item-average scores. If there are non-responses, average for the number of responses available. If there is more than one non-response for a particular subscale, the validity of that subscale is questionable. However, there are sophisticated statistical

approaches for managing missing data that some researchers may wish to use for situations where there are large data sets and the statistical programs to run such procedures.

A total LONG flow scale score can also be obtained by summing the item-average dimension scores. It is recommended that dimension scores be used where possible, as more detailed information about flow is available via the dimension profile compared with a single global score. The flow scales were developed as multidimensional instruments, to facilitate assessment of the flow construct at the level of the nine flow dimensions of which the construct is comprised. Confirmatory factor analyses have consistently demonstrated the dimensional approach to be stronger psychometrically. Thus, where it fits with the research questions being addressed, a multidimensional approach to scoring is recommended. See the Appendix for scoring keys for the LONG Dispositional and State scales respectively.

d) Scoring SHORT Flow

There is one item for each of nine flow dimensions represented in the SHORT scales. The item scores can be used to represent each flow dimension—although the LONG Flow Scales are much better suited to providing dimension profiles than the SHORT scales. The generally recommended procedure for scoring the SHORT scales is to sum the 9 items together, and then divide by 9 to obtain a SHORT Flow score. If an item score is missing, take the average of the items with responses. However, if there are more than two missing responses on the scale, the validity of the scale responses is questionable (taking into account the caveat above re statistical procedures for managing missing data). See the Appendix for scoring keys for the SHORT Dispositional and State scales respectively.

e) Scoring CORE Flow

The scoring procedure for the CORE flow scales is simply to sum the 10 items together, and then divide by 10, to obtain a CORE Flow score. If an item score is missing, take the average of the items with responses. However, if there are more than two missing responses on the scale, the validity of the scale responses is questionable (taking into account the caveat above re statistical procedures for managing missing data). See the Appendix for scoring keys for CORE Dispositional and State flow.

f) Interpreting flow scores

The lowest possible score on the flow scales is 1, with the highest being 5. Scores can easily be interpreted against the response format anchors. For example, a person completing the state scales is asked to indicate the extent of their agreement with each item by selecting the most appropriate response category ranging from 1 (strongly disagree) to 5 (strongly agree). Therefore, lower item average values indicate a stronger degree of disagreement with statements proposed and higher item average values indicate a stronger degree of agreement with statements proposed. Low agreement with statements indicative of a flow characteristic is suggestive that the person's experience

was not substantively “flow-like” in nature. Conversely, strong endorsement of item statements indicates that the individual was undergoing a substantively “flow-like” experience.

When considering dimension-level scores of the LONG flow scales, there is likely to be variation across the scores obtained for each of the nine flow dimensions. This information may provide an indication of relative importance of the various flow dimensions to the activity being assessed.

The mid-range score of ‘3’ on the state scales represents a “neither agree nor disagree” option. This moderate score may indicate some degree of endorsement of the item. It could, however, also indicate some ambiguity regarding relevance of the item to the person’s experience of the activity under consideration. It is nonetheless reasonable to interpret moderate-level scores as being neither strongly indicative that the person has experienced the flow characteristic, nor strongly indicative that the person’s experience did not include the flow characteristic being assessed.

A similar pattern can be interpreted for scores on the dispositional scales, with the context of score interpretation being one of frequency of experience, rather than extent of endorsement of a specific experience as with the state scales. A low range score on one of the dispositional scales indicates that the flow characteristics of this questionnaire are “never” (1) or “rarely” (2) experienced. Such lack of endorsement may provide useful information on the relevance of the flow characteristic being assessed to the setting or individuals being assessed.

A moderate score (for example, ‘3’ or “sometimes”) on the dispositional scales indicates that the flow characteristics are experienced some of the time in the respondent’s experience. A moderate, or mid-way score, range indicates that the respondent reports experiencing the flow characteristic during the nominated activity more than rarely, but not frequently. A high score range on the dispositional scale indicates that the respondent “frequently” (4) to “always” (5) experiences the flow characteristic in their nominated activity.

g) Potential audiences and research settings for the flow scales

The original flow scales were designed to assess flow in physical activity settings, specifically sport and exercise. There is a considerable research base using flow in physical activity settings (e.g., Jackson et al., 1998; Jackson & Eklund, 2002; Karageorghis, Vlachopoulos, & Terry, 2000). While there is a specific focus on movement in a small number of items, there is no reference to structure of the activity or to competitiveness, aspects that might have otherwise tied the scales to a sports environment. Since their development, interest in using the flow scales has come not only from researchers interested in studying optimal experiences in physical activity settings, but also such diverse activities as music (Wrigley, 2001), web-based instructional activity (Chan & Repman, 1999), and computer games (BBCWorld –Click Online 2002). As authors of the scales, we have communicated with researchers from areas such as gifted education, work addiction, yoga, and business regarding utilization of the flow scales in these settings. Moreover, there is considerable interest in examining flow in relationship to other psychological constructs across these diverse

settings. Relationships with concepts such as hope, cohesion, personality type, intrinsic motivation, burnout, self-efficacy, self-esteem, and anxiety have all captured the interest of optimal experience researchers. Thus, it is clear that there is considerable interest in examining flow across a range of settings, and in relation to a diverse set of psychological constructs. It should be pointed out that Csikszentmihalyi's (1975) initial book about the flow concept included data from a variety of settings including surgery, music, dance, sports, and chess. This seminal publication gave strong support to the idea of a consistent state of consciousness (that Csikszentmihalyi labelled "flow") across a diverse range of settings. The utility of the flow scales described in this manual for assessing this experience across different settings is an exciting next phase in their application. Wherever there is interest in assessing quality of experience and quality of performance, the flow scales provide ways of empirically assessing flow.

Chapter 4: The development and validation of the Flow Scales

a) The construct validity approach used to validate the Flow Scales

Psychometricians have emphasized the importance of developing and evaluating frameworks and instruments within a construct validation approach (e.g., Cronbach, 1989; Marsh, 2002). Construct validity refers to the degree to which scores reflect the desired construct, rather than some other construct (Heppner, Kivlignhan, & Wampold, 1992). The degree to which the construct at hand exhibits theorized structure and logical relationships with other variables are regarded as primary ways of establishing construct validity. Marsh (e.g., 1997, 2002) characterized the process of establishing construct validity as a multi-step procedure that begins with analyses of factor structure or dimensionality (within-network approach) and moves on to analysis of patterns of relationship between the construct and other constructs (between-network approach). The approach followed in the development and validation of the flow scales will be described with specific reference to the processes followed for establishing the construct validity of the LONG Flow Scales (Physical). These processes are described in detail for the LONG Flow Scales, as these were the original scales to be developed, and the new versions of the scales that were subsequently developed followed a similar process, and were developed out of the framework of the LONG scales.

b) Within-network validity of the LONG Flow Scales

i. Development and validation of the original LONG Flow Scales

The LONG Flow Scales were grounded in extensive qualitative research with elite performers. Jackson (1992, 1995, 1996) explored the perceptions elite performers held of flow and how they attained this state during their performances. An important consideration in developing self-report instruments to assess flow involved an interest in being able to tap into the whole flow experience. Thus, the nine flow dimensions described by Csikszentmihalyi (1990) were used as the background structure when forming the LONG Flow Scales. These scales were designed with the specific purpose of assessing flow from a multidimensional perspective, and to include assessments of specific experiences as well as more general tendencies to experience flow (i.e., dispositional and state flow).

Taking the aforementioned multidimensional approach to the measurement of flow, Jackson developed a self-report instrument comprised of 36 items, and together with Marsh (Jackson & Marsh, 1996), conducted initial psychometric assessment of this scale. Items were developed from the nine dimensions of flow described by Csikszentmihalyi (1990). In forming an initial pool of items, earlier self-report scales designed with measurement of flow in mind (e.g., Begly, 1979; Csikszentmihalyi & Csikszentmihalyi, 1988; Privette, 1984; Privette & Bundrick, 1991) were examined as a reference base. Qualitative research examining the flow construct (e.g., Jackson, 1992, 1995, 1996) was drawn upon for the phrasing of items. Seven experts in sport and exercise psychology who had published flow-related research studies evaluated this initial item pool. Feedback from the panel of experts led to a 54-item (6 items per scale)

instrument. This instrument was administered first to 252 physical activity participants. This pilot study led to identification of some problematic items. Specifically, several negatively or ambiguously worded items were found to be less effective in item analyses and were replaced with more clearly stated, positively worded items. The revised Flow State Scale was then administered to 394 physical activity participants, primarily comprised of athletes. Confirmatory factor analyses of the data (N = 381) analysed the fit of both a 54-item model and a shorter 36-item model. The fit of the 36-item model was satisfactory, while the fit of the 54-item model was marginal. Taking both the stronger CFA results for the 36-item version, and almost equal reliability estimates between the 54-item and 36-item scales into account, it was clear that the 36-item was the stronger version, and it was selected as the final version at this time.

The 36-item FSS contained four items for each of the nine flow dimensions. Confirmatory factor analyses demonstrated a satisfactory fit of both a nine first order factor model and a higher order model with a global flow factor. Parameter estimates provided good support for the nine-factor structure with freely estimated factor correlations. The factor loadings were all substantial, ranging from .56 to .88, with a median loading of .74. Correlations between the factors supported the separation into nine flow factors. Although the relationships between the factors were all positive, the size of the correlations ranged from low to moderate, varying from .18 to .72 (median r = .50), and supporting the multidimensional model.

Jackson and Marsh (1996) also assessed a higher order model with one global flow factor. Support was obtained for this higher order model. All of the nine factors loaded on the higher order factor but there was considerable variability in the size of the loadings, ranging frrom.39 for time transformation to .91 for sense of control.

The dispositional version of LONG Flow was developed subsequent to the state version, to assess individual differences in propensity to experience flow, using instructions that focused upon the frequency of experience of flow characteristics. Marsh and Jackson (1999) reported a series of sophisticated confirmatory factor analyses to individually and simultaneously evaluate the FSS and DFS measurements. Overall, support was presented for the construct validity of both the state and dispositional measures. Item loadings on first order factors ranged from .43 to .89 for FSS (mean = .78), and from .29 to .86 for DFS (mean = .74). Simultaneous modelling of the DFS and FSS scales provided support for the construct validity of the measures. Observed correlations were substantially higher between matching dispositional factors and state factors (.38 to .78, median *r* = .62) than between non-matching factors in all instances. The correlation between DFS and FSS loss of self-consciousness factors (*r* = .38) was the only correlation less than .56. In all cases, non-matching factor relationships were lower than those observed between matching factors. Marsh and Jackson (1999) found that models involving first order factors only fit marginally better than models with higher order factors. Higher order factor loadings ranged from .00 to .88 for the FSS (mean = .55) and from .04 to .89 for the DFS (mean = .62). While most higher order factor loadings were reasonable (i.e., > .40), the time transformation factor did not load on the higher order factor. This factor exhibited essentially no relationship with the global factor in either DFS or FSS measurement.

Two of the flow dimensions measured by the LONG Flow Scales, lack of self consciousness and time transformation, have lacked robust support across several studies in a physical activity setting. In a study with masters' level swimmers, Kowal and Fortier (1999) found that these dimensions were not significantly associated with their measures of situational motivation. Vlachopoulos et al. (2000), in a study of aerobic dance participants, found time transformation and loss of self-consciousness to be less associated with global flow than the rest of the flow dimensions.

The analyses of data collected with the original flow scales indicate that while they performed reasonably well on the whole, there were areas where improvements could be made. For example, in the hierarchical factor analytic model (Jackson & Marsh, 1996; Kowal & Fortier, 1999; Marsh & Jackson, 1999; Vlachopoulos et al., 2000), the original flow scales exhibited relatively weak associations between certain flow dimensions (such as loss of self-consciousness and time transformation) and the global flow factor. Inspection of parameter estimates (Jackson & Marsh, 1996; Marsh & Jackson, 1999; Vlachopoulos et al, 2000) indicated that a small number of particular items warranted some additional conceptual and empirical consideration. Thus, revisions were undertaken and this led to the DFS-2 and the FSS-2.

ii. Development and validation of the revised LONG Flow Scales (DFS-2 & FSS-2)

When evaluating the measurement qualities of the flow scales, conceptual and statistical issues were considered. As part of the conceptual evaluation, feedback on items in the original scale was obtained from the developer of the flow model, Csikszentmihalyi (1975, 1990), and new potential items developed. Potential new items for the weaker-performing items statistically were also developed. Structural equation modelling analyses were used to assess the small pool of new items and to come up with new versions of the scales (Jackson & Eklund, 2002).

***Study 1. Item identification sample*.** Revised versions of the FSS and DFS were administered to a large, diverse group of physical activity participants. The revised versions of the scales contained the original 36 items plus 13 additional items. These additional items were devised as potential replacements to address the identified conceptual or statistical concerns. Other than the additional items, the format of the scales remained essentially the same as the original versions.

An item identification sample of just under 600 (N = 597) physical activity participants completed the revised scales. Most participants provided only state or dispositional data (n = 417) but a small pool did provide data on both revised scales (n = 180). The participant pool contained responses wide ranging in age from 17 to 72 years (M = 26.3, SD = 10). There were approximately equal numbers of males (49%) and females (51%). Eligibility for inclusion in the study involved a minimum participation in physical activity of twice per week. There was a wide range of activities represented in the sample. Activities ranged from highly competitive sports, such as rugby, to exercise activities like weight training. In all, 33 different activity types were included. The most frequently mentioned activities included touch football (N = 145), triathlon (N = 105), running (N = 65), duathlon (N = 56), surfboat rowing (N = 45), track & field (N = 41), swimming (N = 27), rugby (N = 25), soccer (N = 24), and volleyball (N = 23).

Participation levels also varied, ranging from international (10%) to national (15%), state (24%), and club or school (26%) involvement. There were also participants

who indicated they either saw themselves as individual competitors (10%), or who did not view their involvement as competitive (14%). Participants were recruited from university undergraduate classes, sport teams, and sport events (such as triathlons). There was a standardized information sheet given to all participants, outlining the informed consent procedures and purpose of the study. The dispositional version of the scale was completed at a time separate from participation, while the state version of the scale was given to participants to complete directly after their activity. For the state version, participants were asked to indicate the length of time between event completion and the completion of the questionnaire. The average time was 24.6 minutes (SD = 25.2).

To select an optimal set of indicators from existing items and potential new items described earlier, structural equation modelling procedures that used maximum likelihood estimation were employed in an iterative process. Items loaded uniquely upon factors in all analyses. In the selection process, a single item was introduced into a 36-item measurement model consistent with previous studies (e.g., Jackson & Marsh, 1996; Marsh & Jackson, 1999). This process allows the performance of an item to be evaluated (for example, item loading, pattern of associated residuals, modification indices) within the context of all other construct indicators. This process was repeated until a conceptually and empirically optimal 36-item solution (4 items per factor) was identified. In the few instances where item selection was statistically ambiguous, conceptual issues and the advantage of having a consistent set of indicators across inventory formats were deciding issues. Goodness-of-fit in these analyses was evaluated through the use of the χ^2 test statistic as well as the Non-normed Fit Index (NNFI), the Comparative Fit Index (CFI), and the root mean square error of approximation (RMSEA) (Hoyle & Panter, 1995).

Goodness-of-fit in these analyses was evaluated through the use of the χ^2 test statistic as well as the Non-normed Fit Index (NNFI), the Comparative Fit Index (CFI), and the root mean square error of approximation (RMSEA) (Hoyle & Panter, 1995). The χ^2 is an absolute fit index. The NNFI estimates the relative improvement per degree of freedom of the target model over a baseline model. The CFI assesses the relative reduction in lack of fit as estimated by referencing the non-central χ^2 of a target model to a baseline model. The RMSEA assesses the fit function of the target model adjusted by the degrees of freedom.

NNFI and CFI values exceeding .90 and .95 are typically taken to indicate acceptable and excellent model fits to the data (Hoyle & Panter, 1995; Hu & Bentler, 1999). For the RMSEA, values of less than .05 and .08 are taken to reflect, respectively, a close fit and a reasonable model fit (Browne & Cudeck, 1993) while the relevant 90% confidence intervals provide a useful context for interpretation of the observed point values. Finally, evaluation of parameter estimates (i.e., factor loadings), modification indices, and the pattern of standardized residuals were also crucial in making decisions about the utility and statistical appropriateness of potential new items. Items were considered to be strong indicators of their factor if they had larger factor loadings, modification indices suggesting the item loaded simply, and residuals indicating a small discrepancy between observed and model reproduced correlations for the variable.

Five of 13 new items were selected through these analyses to replace existing items in the measurement of the flow experience scales. Table 1 presents the goodness-of-fit values for the final set of 36 items (5 new, 31 original) that are identified in the item identification analyses for both the first order factor model and higher order model. Significant χ^2 values were observed in all instances. Nonetheless, both the first order and the higher order models exhibited NNFI and CFI values well above .9 and RMSEA confidence interval values suggesting the .05 criterion as tenable in these analyses. The fit values were slightly better for the model involving exclusively first order factors, but the difference is largely inconsequential.

Parameter estimates are presented from the Study 1 evaluation of the higher order model in Table 2. The loadings of items on first order factors are all substantial, ranging from .51 to .89 for the FSS-2 (mean = .78). The corresponding DFS-2 loadings ranged from .59 to .86 (mean = .77). The loading of the first order factors on the global flow factor is also presented in Table 2. They range between .23 and .94 (mean = .66) for the FSS-2 and between .44 and .91 (mean = .71) for the DFS-2. Correlations observed in Study 1 between the revised FSS-2 and DFS-2 first order latent factors ranged from .13 to .76 (median r = .48) for the FSS-2, and from .24 to .78 (median r = .51) for the DFS-2. These values indicate that the nine flow factors, while sharing common variance as expected, measure reasonably unique constructs. Overall, common variance between subscales tended towards less than 50%, making it reasonable to conclude that the flow subscales tap into reasonably unique aspects of the flow experience.

In summary, these results indicate that revised LONG Flow Scales (i.e., the DFS-2 and the FSS-2) demonstrated acceptable factorial validity for assessing dispositional and state flow, respectively. We considered it important to cross-validate the FSS-2 and DFS-2 models to ensure that the results observed in the first study were not sample specific. Data for this first study was collected with 49 item versions of the scales. Cross-validation with the final 36-item versions of these scales was considered important to ensure that items behaved appropriately in the context of the final measurement presentation format. A cross-validation study (Jackson & Eklund, 2002) was conducted to address these issues.

Table 1. Global Fit Indices for FSS-2 and DFS-2 Item Identification and Cross-Validation Analyses

		n	χ^2	df	NNFI	CFI	RMSEA	90% CI
Measurement Model (9 First Order Factors)								
Item ID	FSS-2	391	1171.026	558	.915	.925	.053	.049 - .057
X-Val	FSS-2	422	1177.558	558	.931	.939	.051	.047 - .055
Item ID	DFS-2	386	956.859	558	.943	.950	.043	.038 - .048
X-Val	DFS-2	574	1427.219	588	.901	.912	.052	.049 - .055
Higher Order Factor Model (9 First Order Factors, 1 Second Order Factor)								
Item ID	FSS-2	391	1266.189	585	.910	.917	.055	.050 - .059
X-Val	FSS-2	422	1305.374	585	.923	.929	.054	.050 - .058
Item ID	DFS-2	386	1063.348	585	.935	.940	.046	.042 - .050
X-Val	DFS-2	574	1606.487	585	.889	.897	.055	.052 - .058

Note. Item ID = Item Identification model. X-Val = Cross-validation model.

Reprinted from S.A. Jackson and R.C. Eklund, 2002, “Assessing flow in physical activity: The flow state scale-2 and dispositional flow scale-2,” *Journal of Sport & Exercise Psychology* 24(2): 133-150.

Table 2. Loadings from Item Identification and Cross-Validation Analyses of the FSS-2 and DFS-2

		FSS-2 Analyses		DFS-2 Analyses	
Factor	Item	Item ID	X-Val	Item ID	X-VAL
F1 - Balance	FSS01	.574	.605	.622	.514
F1 - Balance	FSS10	.813	.812	.797	.707
F1 - Balance	FSS19	.808	.809	.852	.745
F1 - Balance	FSS28	.781	.763	.806	.771
F2 - Merging	FSS02	.629	.743	.666	.711
F2 - Merging	FSS11	.682	.848	.760	.733
F2 - Merging	FSS20	.840	.845	.832	.828
F2 - Merging	FSS29	.849	.864	.775	.832
F3 - Goals	FSS03	.725	.779	.677	.719
F3 - Goals	FSS12	.774	.850	.777	.747
F3 - Goals	FSS21	.763	.795	.783	.773
F3 - Goals	FSS30	.771	.758	.815	.709
F4 - Feedback	FSS04	.733	.736	.860	.728
F4 - Feedback	FSS13	.851	.785	.815	.797
F4 - Feedback	FSS22	.801	.853	.855	.824
F4 - Feedback	FSS31	.810	.832	.810	.788
F5 - Concentration	FSS05	.659	.775	.665	.611
F5 - Concentration	FSS14	.672	.697	.684	.643
F5 - Concentration	FSS23	.887	.866	.815	.806
F5 - Concentration	FSS32	.866	.892	.844	.780
F6 - Control	FSS06	.772	.799	.704	.675
F6 - Control	FSS15	.786	.799	.744	.718

F6 - Control	FSS24	.820	.842	.815	.771
F6 - Control	FSS33	.805	.786	.837	.718
F7 - Consciousness	FSS07	.822	.854	.742	.760
F7 - Consciousness	FSS16	.826	.912	.853	.812
F7 - Consciousness	FSS25	.786	.780	.780	.638
F7 - Consciousness	FSS34	.874	.903	.846	.823
F8 - Time	FSS08	.796	.813	.721	.733
F8 - Time	FSS17	.754	.871	.793	.826
F8 - Time	FSS26	.510	.433	.587	.606
F8 - Time	FSS35	.763	.722	.741	.732
F9 - Autotelic	FSS09	.755	.849	.702	.683
F9 - Autotelic	FSS18	.771	.771	.736	.550
F9 - Autotelic	FSS27	.835	.885	.779	.789
F9 - Autotelic	FSS36	.810	.898	.831	.779
F10 -Flow	F1	.779	.819	.846	.821
F10 -Flow	F2	.807	.704	.800	.718
F10 -Flow	F3	.736	.739	.806	.768
F10 -Flow	F4	.602	.597	.673	.707
F10 -Flow	F5	.763	.669	.776	.725
F10 -Flow	F6	.938	.895	.900	.908
F10 -Flow	F7	.446	.471	.441	.432
F10 -Flow	F8	.232	.208	.449	.300
F10 -Flow	F9	.660	.649	.706	.605

Reprinted from S.A. Jackson and R.C. Eklund, 2002, “Assessing flow in physical activity: The flow state scale-2 and dispositional flow scale-2,” *Journal of Sport & Exercise Psychology* 24(2): 133-150.

***Study 2. Cross-validation sample*.** Approximately 900 (N =897) physical activity participants completed the new versions of the Flow Scales identified in Study 1. Most provided only DFS-2 or FSS-2 data (n = 798), but a small pool provided data on both of the revised scales (n = 99). The DFS-2 followed the format of the original DFS in the structure of the questionnaire. Respondents were asked to think about how often they experienced each characteristic described in the items and to rate their responses on a 5-point Likert scale, ranging from 1 (never) to 5 (always). Following the structure of the FSS, the FSS-2 involves respondents indicating extent of agreement with the items potentially characterizing their experience in a just completed event. Responses are given on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

The age range for this sample was 16 to 82 years (M = 26.3, SD = 11.1). Males (48%) and females (52%) were approximately equally represented. Eligibility for inclusion in the sample was the same as for Study 1, a minimum of twice per week participation in one's activity. There were 27 activity types, ranging from highly competitive sports (such as US college football) to exercise activities (such as aerobics). This sample included a substantial number of dance and yoga participants, providing responses from physically-oriented activities that were not specifically sports or exercise. The most commonly reported activities included running (N = 255), dance (N = 177), yoga (N = 99), triathlon (N = 56), Australian rules football (N = 51), basketball (N = 47), American football (N = 46), rugby (N = 33), track and field (N = 33), and soccer (N = 31). Involvement ranged from international (5%) to national (11%), US College (16%), state (17%), club or school (23%), as well as participants who indicated being individual competitors (13%) or who did not compete at all (14%).

Participants were recruited from a variety of physical activity settings, as well as from university undergraduate classes of human movement or psychology. A standard introduction sheet was given to all participants, outlining the informed consent procedures and purpose of the study. The dispositional version of the scale was completed at a time separate from participation, while the state version of the scale was given to participants to complete directly after completing their activity. For the state version, participants were asked to indicate the length of time between event completion and completion of the questionnaire. The average time was 24.8 minutes (SD = 26.1).

Analyses and fit indices employed in Study 2 were consistent with the procedures described in Study 1, other than one improvement in statistical technique was made. Specifically, analyses in Study 2 were conducted using means and covariances that were obtained via Graham and Hofer's (1995) EMCOV23 program to manage missing data. This program employs the EM algorithm (Dempster, Laird & Rubin, 1977). The EM algorithm implements, by repeated imputation-estimation cycles, the Full Information Maximum Likelihood (FIML) approach for estimating means and covariance matrices from incomplete data. FIML treatment of missing data is a theory-based approach considered to be superior to the mean-imputation method (Wothke, 2000) that was employed in Study 1.

Table 1 shows goodness-of-fit values for the DFS-2 and FSS-2 in cross-validation analyses for both a nine first order factor measurement model and the higher order global flow factor model. Satisfactory observed fit values were obtained for both the first order and the higher order models in these cross-validations. The DFS-2 and

FSS-2 measurement models exhibit NNFI and CFI values all exceeding .9. RMSEA point estimate values for these models marginally exceed .05. Nonetheless, RMSEA 90% confidence intervals surrounding the point estimates indicate that it would be intemperate to conclude that the RMSEA values do not indicate a close fit of models to data. The higher order factor models exhibit NNFI and CFI values approximating or exceeding .9. RMSEA point estimate values for these models marginally exceed .05. RMSEA 90% confidence intervals indicate that the models provide a reasonable if not close fit for the data. Overall, the fit values suggest a slightly better fit for the first order factor models, particularly for the DFS-2.

Parameter estimates presented in Table 2 show good support for the nine flow dimensions. The loadings of items on the first order factors are all substantial, ranging from .43 to .91 for the FSS-2 (mean = .80). The corresponding DFS-2 loadings ranged from .51 to .83 (mean = .73). Correlations among the first order factors ranged from .06 to .74 (median r = .40) for the FSS-2, and between .16 and .73 (median r = .48) for the DFS-2. Again, the magnitude of these relationships indicate that the flow subscales tap into reasonably unique aspects of the flow experience. Table 2 reveals that the loadings of the first order factors on the global flow factor range between .21 and .90 (mean = .64) for the FSS-2 and between .30 and .91 (mean = .67) for the DFS-2.

In summary, the two studies described above demonstrate that the revised flow scales provide satisfactory tools that can be used to assess dispositional and state flow. These two studies were described in detail in a scale validation paper by Jackson and Eklund (2002), and an initial test manual by the same authors (Jackson & Eklund, 2004). The present manual extends this earlier test manual by including several new versions of the flow scales, and it updates the LONG Flow scale information with the latest research.

The LONG scales reported on in Jackson and Eklund (2002, 2004), the DFS-2 and FSS-2, contained five replacement items that provided a more conceptually coherent and statistically sound measurement of the flow dimensions. The fit values for the new item set were better than those obtained with the original flow scales. The item-identification analyses did not reveal any substantial weaknesses statistically with the scales. Nonetheless, the higher-order factor loadings for time transformation remained relatively weak. At the item level, one time transformation item had a relatively weak factor loading in the cross-validation analysis of the FSS-2. The loading on the DFS-2 cross-validation analysis was reasonable and so it is unclear whether the item is problematic or simply dependent on the situational variation that is part of FSS sampling. Interestingly, the item was one of the new items that focused on time passing quickly.

Despite the introduction of new items, the higher order factor loadings on the global flow factor for loss of self-consciousness and more so, for time transformation, remained relatively low. Jackson and Eklund (2002) suggested several possible reasons for this pattern of relationships. In relation to loss of self-consciousness, the self and body awareness necessary for competent physical performance may cloud the distinction between this level of awareness and what is measured in the loss of self-consciousness sub-scale. For example, a figure skater is concerned with how she presents herself during her performance, since she is judged on the presentation of her

routine. For performers such as this, there is likely to be low endorsement of a loss of self-consciousness item such as, “I am not concerned with how I am presenting myself”.

An unintended but interesting development to the new loss of self-consciousness sub-scale described by Jackson and Eklund (2002) is a self-presentational emphasis in how this dimension is measured in the DFS-2 and FSS-2. The items tend toward a focus on loss of concern with evaluation of self by others. This is a central consideration in loss of self-consciousness, and may be particularly relevant in the public realm of sports and physical activity. The item set may present a more narrow definition of loss of self-consciousness than intended by Csikszentmihalyi (1990), who refers to a lack of focus upon information we normally use to represent who we are to ourselves when experiencing this dimension. With regard to the time transformation dimension, it has previously been discussed how time awareness may be part of the challenge to some activities (Csikszentmihalyi, 1990). For example, in some sports, the clock is an integral part of the structure of the situation or the performance evaluation (Jackson & Marsh, 1996; Jackson & Eklund, 2002). Despite the improvements in the higher-order loading of time transformation with the new item set of the DFS-2 and FSS-2, this dimension remained the dimension with the lowest higher-order factor loading on the global flow factor. Future research could be directed at assessing whether this dimension is dependent on certain situations or types of activities. The time transformation factor has demonstrated good internal consistency, and provides a useful and conceptually relevant measure of the extent to which respondents perceive a difference in the passing of time during flow experiences. With more data collected on the time and self-consciousness dimensions across different types of settings, it should become clearer whether there are situations, or types of individuals, where these dimensions are significant components of the flow experience. Investigating how these two dimensions are experienced in different settings, and across different levels of performers, should help advance understanding of how the process of flow operates. An exploratory study of the dimensions of flow using IRT analysis (Tenenbaum, Fogarty, & Jackson, 1999) suggested that the loss of self-consciousness and time transformation dimensions may only be experienced in deeper levels of flow. This type of sequential analysis of the process of flow may help to explain the differences in endorsement of the flow dimensions found in CFA analyses.

A further, large-scale psychometric evaluation of the LONG Flow Scales was published in 2008 (Jackson, Martin, & Eklund, 2008). With large Ns (652 DFS-2, 499 FSS-2), and sophisticated CFA analyses, Jackson and colleagues again demonstrated substantive psychometric support for the Long scales. Goodness of fit indices, along with descriptives on the scales representing the nine-factor and higher order models are shown in Table 3.

Reliability of the Long Flow Scales. The reliability, or internal consistency, of the flow scales has consistently been demonstrated to be robust. The initial study of the original Flow State Scale (Jackson and Marsh, 1996) found alphas ranging from .80 to .86, with a mean alpha of .83. Similar internal consistency values were found in subsequent data collections. Jackson et al. (1998) in their study of master athletes, found alphas ranging from .72 to .91 (mean alpha = .85) for the FSS, and from .70 to .88 for the DFS (mean alpha = .82). A study with a cohort of competitive athletes by

Jackson et al. (2001) obtained alphas ranging from .76 to .92 (mean alpha = .85) for the FSS, and from .72 to .89 (mean alpha = .81) for the DFS.

DFS-2 and FSS-2 scales have demonstrated equally strong internal consistency estimates. In the Jackson and Eklund (2002) item identification sample, reliability estimates for the FSS-2 ranged from .80 to .90, with a mean alpha of .85. DFS-2 internal consistency estimates in the item identification sample ranged from .81 to .90, with a mean alpha of .85. In the cross-validation sample, reliability estimates for the FSS-2 ranged from .80 to .92 (mean alpha = .87), and for the DFS-2 from .78 to .86 (mean alpha = .82). In a further psychometric evaluation of the Long flow scales, Jackson, Martin, & Eklund (2008) found internal consistency estimates ranging from .80 to .89 for the DFS-2, and from .76 to .90 for the FSS-2. The reliability of the flow scales reported by other researchers has also been satisfactory, as shown in the following examples. Kowal and Fortier (1999) using the original FSS with master swimmers (*n* = 203) found alphas ranging from .76 to .89 (mean alpha of .84). Karageorghis et al (2000) using the original FSS with aerobic dance participants (*n* = 1231) obtained alphas ranging from .65 to .84, with a mean alpha of .80.

Table 3. LONG (36-item) and SHORT (9-item) Flow Descriptive and CFA Statistics

	Mean	SD	Skewness	Kurtosis	Reliability	CFA Load Range (mean)
DISPOSITION 36 item						
Challenge skill balance	3.69	.59	-.43	.56	.81	.50-.83 (.72)
Action awareness	3.74	.65	-.49	.76	.87	.76-.83 (.80)
Clear goals	3.97	.61	-.36	.63	.80	.63-.79 (.72)
Unambiguous feedback	3.94	.64	-.23	-.03	.87	.73-.84 (.80)
Concentration on task	3.66	.69	-.17	.01	.85	.65-.86 (.77)
Sense of control	3.80	.61	-.17	.11	.83	.72-.76 (.75)
Loss self-consciousness	3.36	.85	-.03	-.23	.89	.74-.88 (.83)
Transformation of time	3.49	.79	-.42	.53	.87	.70-.88 (.79)
Autotelic experience	4.20	.61	-.72	.54	.83	.65-.84 (.75)
CFA Model Fit 9 first-order factors: χ^2 = 1380.96 df =558; CFI=.98; NNFI=.98; RMSEA=.05; SRMR=.04						
CFA Model Fit Higher-order model: χ^2 = 1603.14, df =585; CFI=.98; NNFI=.97; RMSEA=.05; SRMR=.06						
STATE 36 item						
Challenge skill balance	3.70	.66	-.44	.42	.76	.42-.80 (.68)
Action awareness	3.32	.91	-.22	-.69	.90	.80-.87 (.84)
Clear goals	3.94	.60	-.33	.53	.80	.67-.78 (.72)
Unambiguous feedback	3.85	.63	-.66	1.23	.86	.75-.80 (.78)
Concentration on task	3.69	.81	-.34	-.41	.87	.64-.90 (.79)
Sense of control	3.72	.76	-.52	.14	.88	.73-.86 (.80)
Loss self-consciousness	3.85	.90	-.70	.01	.90	.74-.93 (.84)
Transformation of time	3.50	.83	-.37	.02	.85	.64-.82 (.77)
Autotelic experience	4.13	.69	-.81	1.09	.86	.70-.84 (.78)
CFA Model Fit 9 first-order factors: χ^2 = 1332.89 df =558; CFI=.98; NNFI=.97; RMSEA=.05; SRMR=.05						
CFA Model Fit Higher-order model: χ^2 = 1717.60, df =585; CFI=.97; NNFI=.96; RMSEA=.06; SRMR=.08						

Adapted from S.A. Jackson, A.J. Martin, and R.C. Eklund, 2008, "Long and short measures of flow: The construct validity of the FSS-2, DFS-2, and new brief counterparts," *Journal of Sport & Exercise Psychology* 30(5): 561-570. © Human Kinetics, Inc.

Summary of within-network validity of the Long flow scales. As discussed, one of the main statistical tools used to assess within-network validity is confirmatory factor analyses (CFA). Substantial factorial validity evidence has been published on the LONG flow scales in CFA reports of the DFS, DFS-2, FSS, and FSS-2 (e.g., Jackson, Martin, & Eklund, 2008; Jackson & Eklund, 2002; Jackson & Marsh, 1996; Jackson et al., 2001; Marsh & Jackson, 1999, Vlachopoulos et al., 2000). This evidence provides strong support for the factorial validity of the Flow Scales.

c) Between-network validity of the LONG Flow Scales

Jackson and colleagues (Jackson et al. 1998; Jackson et al, 2001) reported between-network construct validity results for the original flow questionnaires. Theoretically expected patterns of the relationship between flow and psychological constructs were observed between flow and perceived ability, anxiety, and intrinsic motivation (Jackson et al., 1998). These constructs were chosen for evaluation of between-network validity because, theoretically speaking, they are expected to be related to the flow experience. To understand these relationships, it is useful to refer back to the flow model (see Figure 1). In order for flow to occur, individuals must have belief in their skills in a challenging situation. Thus, perceived ability is a necessary precursor to flow. When perceived skills are lacking, a person in a challenging situation can experience anxiety rather than flow, as illustrated in Figure 1. The relationship between flow and intrinsic motivation is similarly clear. Flow, as an autotelic state, is intrinsically motivating by definition.

Using global flow scores of the original LONG Flow Scales as dependent variables, the above constructs were observed to be significant flow predictors (Jackson et al., 1998). Specifically, 38% of the variance in global dispositional flow was accounted for by a perceived ability measure (Jackson & Roberts, 1992), (β = .29); the concentration disruption subscale (β = -.28) of Smith et al.'s (1990) trait anxiety scale; and an experience stimulation (intrinsic motivation) subscale (β = .24) of Pelletier et al.'s (1995) sports motivation scale. For global state flow, 27% of the variance was explained by perceived ability (β = .23), intrinsic motivation-stimulation (β = .22), and a worry subscale (β = -.20) from the anxiety measure.

Using canonical correlation analyses, Jackson et al. (1998) examined multivariate relationships among these same constructs and flow subscales. A single significant canonical function accounted for more than 10% of the variance in the set of dispositional flow subscales. All dispositional flow constructs had meaningful loadings on the flow variate, except the time transformation subscale. Challenge-skill balance had the strongest standardized canonical loading (.91), followed by concentration (.80), clear goals (.72), sense of control (.71), unambiguous feedback (.70), and autotelic experience (.50). Action-awareness merging and loss of self-confidence loaded more weakly on the canonical variate in approximating .30. This variate had a canonical correlation with the predictor variable variate of *Rc* = .72. The most substantive loadings on the predictor variate were perceived ability (.86) and concentration disruption (-.70) (Jackson et al. 1998). Similar findings were obtained for the canonical correlation analyses with the state flow set, although anxiety worry (-.79) loaded most strongly on

the state flow variate. Overall, freedom from worry and distraction, combined with perceptions of competence, were significant factors related to flow in this study.

In another correlational study (Jackson et al., 2001) relationships were examined between flow and dimensions of athletic self-concept, and athletes' psychological skills. These constructs were selected to examine potential relationships with flow due to theoretical relevance. Multidimensional self-concept was chosen to examine the relationship between the perceived skills side of the flow equation from the perspective of more specific facets of physical self-concept. Psychological skills were included because the attainment of flow is not an easy outcome; psychological skill use was predicted to facilitate the flow experience.

In global dispositional flow, both self-concept (R^2 = .53) (Marsh, Hey, Johnson, & Perry, 1997) and psychological skills (R^2 = .58) (Thomas, Murphy, & Hardy, 1999) accounted for substantial amounts of variance. There was considerable overlap between these two sets of predictors. The resultant analyses and results are described in detail in Jackson et al. (2001). Specific facets of self concept and psychological skills that showed the strongest relationships with flow variate in canonical analyses were as follows: (a) self concept factors of overall performance potential (standardized canonical loadings of .88 DFS & .78 FSS), mental skills (loadings of .87 DFS & .81 FSS), and physical skills (loadings of .77 DFS & .62 FSS); (b) psychological skills of negative thinking (loadings of -.66 DFS & -.73 FSS), activation (loadings of .66 DFS & .68 FSS), emotional control (loadings of .66 DFS & .73 FSS), relaxation (loadings of .64 DFS & .67 FSS), goal-setting (loadings of .61 DFS & .45 FSS), and imagery (loadings of .60 DFS & .52 FSS). In both of the above-mentioned studies, dispositional flow demonstrated stronger relationships with the various psychological constructs than did the state flow measures. This was an expected finding given that all of the non-flow constructs were also assessed at a dispositional level. It also provides support for the reliability of the DFS as a dispositional measure of flow.

Kowal and Fortier (1999) found theoretically expected patterns of relations between flow, as assessed by the original FSS, and motivation, in a sample of master swimmers. Significant correlations were observed between global flow and intrinsic motivation ($r = .60$, $p < .01$), and between global flow and self-determined extrinsic motivation ($r = .44$, $p < .01$). A non-significant association was found between non-self-determined extrinsic motivation and global flow ($r = -.08$, $p = .259$). Swimmers motivated in a self-determined way reported higher instances of flow than swimmers who reported a low incidence of flow. Differences were found between high and low flow groups on intrinsic motivation ($t(112) = -9.12$, $p < .001$) and self-determined extrinsic motivation ($t(105) = -5.87$, $p < .001$). Situational determinants of perceived competence, autonomy, and relatedness were also positively related to flow experiences.

Karageorghis et al. (1999) examined relationships between state flow and post-exercise feelings. They found positive associations between the FSS (original) and post-exercise feelings of revitalization, tranquillity, and positive engagement constructs assessed by the Exercise Feeling Inventory (Gauvin & Rejeski, 1993). Using structural equation modelling techniques, moderate to strong positive associations were found between global flow and positive engagement ($\beta = .59$), revitalization ($\beta = .55$), and tranquillity ($\beta = .46$).

The studies by Jackson et al. (1998; 2001), Kowal and Fortier (1999), and Karageorghis et al. (2000) demonstrate that logically relevant constructs were related to the flow construct in theoretically expected patterns. This demonstrates support for between-network validity of the flow scales. These studies were conducted with the original versions of the flow scales. More recent research examining relationships with relevant psychological constructs and the revised flow scales has also been conducted.

Jackson, Martin, and Eklund (2008) assessed the between-network validity of the LONG flow scales in two ways. First, several theoretically relevant constructs were examined in their relationship to dispositional and state flow. Moderate associations were found between dispositional flow and measures of intrinsic motivation (Pelletier et al., 1995), (mean r = .34); perceived competence (Jackson & Roberts, 1992), (mean r = .38); and anxiety (Spielberger, 1983) (mean r = -.36). For state flow, a situational measure of intrinsic motivation (Guay, Vallerand, & Briere, 2001), (mean r = .33) was moderately correlated with the FSS-2, while a measure of positive well-being (Subjective Exercise Experience Scale, McAuley & Courneya, 1994) had a moderately high correlation (mean r = .42).

Jackson, Martin, and Eklund (2008) also examined between-network validity by assessing invariance across different forms of the flow scales. Described in detail in this validation paper, the results of seven multigroup CFAs, assessing five models were described. The most critical model, involving holding factor loadings invariant across models, showed relative invariance. Relatively invariant fit indices on factor loadings indicate that loadings across different forms of flow scales are predominantly congruent. Fit tended to decline on other parameters–particularly on uniquenesses–when short state flow was introduced to invariance tests.

Predictive validity. The relationships between FSS (original) flow ratings and performance (subjective and objective) correlates (such as perceived skill, perceived success, subjective performance ratings, overall finishing position) have been examined via correlational analyses. Specifically, flow state dimensions were positively correlated with measures of perceived skill and perceived success (Jackson et al., 1998). There were a number of significant correlations with the state flow subscales. Perceived skill had the strongest associations with challenge-skill balance (r = .55), sense of control (r = .36), and global flow (r = .49). Perceived success had the strongest relationships with autotelic experience (r = .57), challenge-skill balance (r = .45), a sense of control (r = .36), and global flow (r = .41).

In another study (Jackson et al., 2001), the flow dimensions of autotelic experience ($\beta = .42$) and challenge-skill balance ($\beta = .26$) were significant predictors of subjective performance ratings ($R^2 = .46$, $p < .0001$). Clear goals ($\beta = -.24$), challenge-skill balance, ($\beta = -.19$) and action-awareness merging ($\beta = -.15$) were significant predictors of overall finishing position ($R^2 = .13$, $p = .002$). Performance measures in both studies were more strongly related to FSS measures than to DFS measures. This was expected, since FSS ratings were specifically tied to performance ratings. Stronger relationships were found with self-reported performance levels than with more objective performance measures. These strong relationships are probably a reflection of the level of similarity between the types of measurement used to assess performance and flow.

d) Validation of the SHORT Flow Scales

There are psychometric advantages to longer, multi-dimensional self-report instruments. However, practical considerations often dictate the need for shorter, abbreviated versions. For example, during a sports event, athletes and coaches may be willing to complete a 9-item scale, but reluctant to answer a 36-item one. In large-scale projects involving many measures, short forms may be preferable to keep a questionnaire package to a reasonable size for participants, or because a particular construct is not the central focus, and can be reasonably estimated with a short measure. For reasons such as these, Jackson and colleagues (Jackson, Martin, & Eklund, 2008; Martin & Jackson, 2008) developed short scales to assess flow.

SHORT Flow is a summary measure of the LONG Flow Scales, and comprises both a dispositional and a state version. Given the extant support for the higher order model in the LONG scales, developing a brief measure that captured this global flow construct was deemed worthwhile. One item from each of the nine flow dimensions was chosen, to ensure that the SHORT Flow Scale was representative of the dimensional flow model. Items were selected based on the size of their standardized factor loading in previous CFA research, with the strongest loading item for each factor being selected. Where there was more than one item with an equal factor loading, the item with the strongest face validity was selected to represent that factor. An initial study trialling the SHORT scale (Martin, Tipler, Marsh, Richards, & Williams, 2006) showed good internal consistency (alpha = .82) for the scale, and hypothesized relationships with physical activity motivation were found.

Because the SHORT scales were derived from the LONG scales, it was possible to examine the set of nine selected items through embedded CFA analyses of the item-identification and cross-validation samples of Jackson and Eklund (2002). That is, in the study by Jackson, Martin, and Eklund (2008), CFAs of the SHORT scales were conducted on data collected (Jackson & Eklund, 2002) on the LONG scales, from which the nine items (i.e., embedded) of the SHORT scales were drawn. Goodness-of-fit indices based on these preliminary analyses showed acceptable fit. Goodness of fit indices based on these preliminary analyses of the SHORT scales showed acceptable fit. The CFAs for the dispositional SHORT flow for the item-identification sample (embedded χ^2 = 66.89 df =27; CFI=.99; NNFI=.98; RMSEA=.05; SRMR=.03) and the cross-validation sample (embedded χ^2 = 127.87 df =27; CFI=.96; NNFI=.95; RMSEA=.07; SRMR=.04) demonstrated a good fit of the hypothesized models to the data. Similarly, the CFAs for the state SHORT flow for the item-identification sample (embedded χ^2 = 74.13 df =27; CFI=.97; NNFI=.97; RMSEA=.05; SRMR=.03) and the cross-validation sample (embedded χ^2 = 124.30 df =27; CFI=.97; NNFI=.96; RMSEA=.06; SRMR=.04) demonstrated a good fit of the hypothesized models to the data. Coefficient alpha estimates of reliability from the item-identification and cross-validation data sets of Jackson and Eklund (2002) for the SHORT DFS-2 were .81 and .74, and for the SHORT FSS- 2 .77 and .78 respectively. Thus, the nine items selected for the SHORT flow scales were assessed as providing a suitable short measure of flow.

Following this preliminary CFA analysis of the SHORT Flow Scales, a more comprehensive examination of SHORT flow was conducted by Jackson, Martin, and

Eklund (2008). Two models were examined using a large data set of physical activity participants. The first assessed a set of independent (i.e., stand alone and not part of the 36-item LONG scale) nine items. The second assessed the nine items that were embedded in the LONG scale. As can be seen in Table 4, both independent and embedded, dispositional and state, flow factors are reliable and the scores are approximately normally distributed. In terms of goodness of fit indices, the dispositional SHORT flow factors fit the data much better (independent χ^2 = 145.27 df =27; CFI=.95; NNFI=.93; SRMR =.05; RMSEA=.08; embedded χ^2 = 72.58 df =27; CFI=.98; NNFI=.97; SRMR =.04; RMSEA=.05) than the state SHORT flow factors (independent χ^2 = 462.04 df =27; CFI=.87; NNFI=.83; SRMR =.08; RMSEA=.13; embedded χ^2 = 183.45 df =27; CFI=.90; NNFI=.87; SRMR =.07; RMSEA=.11), which did not reach acceptable criterion levels of fit across all indices. This difference in relative fit may be because more general dispositional ratings of flow do not discriminate so readily between factors and so a short measure pooling factors does not markedly reduce fit. On the other hand, more situation specific state-like measures may require greater discrimination between factors and a short measure drawing these factors together. Some support was found in the slightly higher mean inter-scale correlation for the 36-item dispositional scale (r = .43) compared to the state scale mean inter-scale correlation (r = .37).

Table 4. SHORT (9-item) Flow Descriptive and CFA Statistics

	Mean	SD	Skewness	Kurtosis	Reliability	CFA Load Range (mean)
DISPOSITION 9 item						
Independent short	3.82	.48	-.15	-.01	.77	.30-.69 (.54)
CFA Model Fit: χ^2 = 145.27 df =27; CFI=.95; NNFI=.93; RMSEA=.08; SRMR=.05						
STATE 9 item						
Independent short	3.78	.54	-.50	1.49	.77	.13-.69 (.52)
CFA Model Fit: χ^2 = 462.04 df =27; CFI=.87; NNFI=.83; RMSEA=.14; SRMR=.08						
DISPOSITION 9 item						
Embedded short	3.75	.48	-.15	.37	.77	.25-.73 (.54)
CFA Model Fit: χ^2 = 72.58 df =27; CFI=.98; NNFI=.97; RMSEA=.05; SRMR=.04						
STATE 9 item						
Embedded short	3.73	.51	-.15	.28	.75	.02-.73 (.50)
CFA Model Fit: χ^2 = 183.45 df =27; CFI=.90; NNFI=.87; RMSEA=.11; SRMR=.07						

Adapted from S.A. Jackson, A.J. Martin, and R.C. Eklund, 2008, "Long and short measures of flow: The construct validity of the FSS-2, DFS-2, and new brief counterparts," *Journal of Sport & Exercise Psychology* 30(5): 561-570. © Human Kinetics, Inc.

To examine possible reasons for the poor fit obtained with the total sample, a sub-set of the state SHORT scale data was examined through CFA. With an *N* of 220, a ball sport sample obtained acceptable fit (χ^2 = 110.74 df =27; CFI=.93; NNFI=.90; SRMR = .06; RMSEA=.12). The RMSEA was on the high side, but this may have been due to sample size and the small number of indicators in the short scale.

To assess the extent to which the short items captured the essence of their corresponding long factor, latent correlations between the nine factors comprising the 36-item (LONG) flow scales and the nine-item (SHORT) flow scales were examined. Using matching data, there was an N of 580 for the dispositional scales, and 475 for the state scales. There was good fit for both the dispositional model (χ^2 = 1,660.98 df =801;

CFI=.98; NNFI=.98; SRMR=.04; RMSEA=.05) and the state model (χ^2 = 1,683.71 df =801; CFI=.98; NNFI=.97; SRMR=.05; RMSEA=.05). SHORT items correlated at acceptably high levels with their long latent factor counterpart for dispositional (range r = .66 -.83; mean r = .76) and state (range r = .65 -.82; mean r = .73) models. These findings demonstrate that both dispositional and state SHORT scales provide good representation of their corresponding long versions. The latent correlation between the higher-order LONG dispositional factor and the SHORT flow factor was .97 (χ^2 = 4,157.35 df =935; CFI=.94; NNFI=.93; SRMR=.08; RMSEA=.07), and the correlation between the higher-order LONG state factor and its SHORT flow factor counterpart was .89 (χ^2 = 4,316.60 df =935; CFI=.92; NNFI=.92; SRMR=.10; RMSEA=.08)—also indicating high correspondence between long and short forms.

In a subsequent larger-scale study on SHORT flow by Martin and Jackson (2008), the internal and external validity of this brief flow measure was examined across the domains of work, sport, and music. Internal validity was analyzed via descriptive statistics and hypothesized model fit. Each of the SHORT scales was found to be reliable and approximately normally distributed. CFAs showed acceptable fit of the hypothesized models to the data for work flow (χ^2 = 136.78 df =27; CFI=.94; NNFI=.92; SRMR=.05; RMSEA=.08), sport flow (χ^2 = 112.38 df =27; CFI=.93; NNFI=.91; SRMR=.06; RMSEA=.12), and flow in music (χ^2 = 45.11 df =27; CFI=.99; NNFI=.98; SRMR=.04; RMSEA=.06). Interestingly, the music scale fit the data best. Factor loadings ranged from .23 to .73 (mean = .51) for the work sample, .47 to .71 (mean = .62) for the sport sample, and .41 to .71 (mean = .61) for the music sample. Internal consistency estimates were reasonable across these three samples, being .73 for the work sample, .83 for the sport sample, and .84 for the music sample.

A series of external validity analyses were conducted comprising analyses of hypothesized key correlates of SHORT flow in the Martin and Jackson (2008) validation study. External correlates were participation, enjoyment, buoyancy, aspirations, adaptive cognitions, adaptive behaviors, impeding/maladaptive cognitions, and maladaptive behaviors. Table 5 demonstrates that the SHORT flow measures for work, sport, and music were related to the external correlates in parallel and hypothesized directions.

e) Validation of the CORE Flow Scales

As described earlier, the idea for the CORE Flow Scales is to tap into the phenomenology of the flow experience. These scales were designed to capture aspects of the central subjective experience of flow, and items were drawn from statements that elite performers made in describing their experience in flow. This set of 10 items was examined across a large sample, covering the domains of academic school work, school extra-curricular activity, and sport.

CFA and descriptive results for this diverse sample were reported in detail in Martin and Jackson (2008), and will be summarized here. Good fit of the hypothesized models to the data were obtained for core general school flow (χ^2 = 585.80 df =35; CFI=.98; NNFI=.98; SRMR=.04; RMSEA=.08), core mathematics flow (χ^2 = 172.73 df =35; CFI=.98; NNFI=.97; SRMR=.04; RMSEA=.10), core flow in extracurricular activity (χ^2 = 590.18 df =35; CFI=.98; NNFI=.97; SRMR=.03; RMSEA=.08), and core flow in sport (χ^2 = 124.79 df =35; CFI=.97; NNFI=.96; SRMR=.05; RMSEA=.11). There were some larger than ideal RMSEA values in

some models, but in the context of acceptable CFIs and NNFIs, the relatively lower sample sizes for mathematics and sport, and because RMSEAs for unidimensional scales are often lower than for multidimensional scales (Kenny & McCoach, 2003), these values were not considered problematic. Factor loadings ranged from .61 to .85 (mean = .76) for the general school sample, .56 to .89 (mean = .78) for the mathematics sample, .53 to .80 (mean = .72) for the extracurricular sample, and .59 to .85 (mean = .74) for the sport sample. Internal consistency estimates were strong across these three samples, being .93 for the general school sample, .94 for the mathematics sample, .91 for the extracurricular sample, and .92 for the sport sample.

A series of external validity analyses were conducted for the following key correlates: participation, enjoyment, buoyancy, aspirations, adaptive cognitions, adaptive behaviors, impeding/maladaptive cognitions, and maladaptive behaviors. Table 6 shows that CORE flow measures were related to external correlates in parallel and hypothesized ways. Generally high correlations were found between CORE flow in general school, mathematics, and extracurricular activities with key correlates. Consistently lower 'off target' correlations between extracurricular activity and general school key correlates supported discriminant validity between different core flow constructs. Follow-up analyses to determine the relationship between general school core flow and extracurricular activity core flow yielded a correlation of .22, indicating good discrimination between the two core flow measures. Although the key correlate measures were not available for the sport sample, the SHORT flow measure for sport was available and subsidiary analyses found a .72 correlation between CORE and SHORT flow – indicating overlap, but 50% of the variance left unshared.

Table 5. SHORT Flow: External Validity (Motivation and Engagement) Correlations

	Participation	Enjoyment	Buoyancy	Aspirations	Adaptive Cognitions	Adaptive Behaviors	Impeding Cognitions	Maladaptive Behaviors	Mean Absolute r
SHORT FLOW									
WORK	.74	.82	.81	.71	.72	.59	-.59	-.70	.71
SPORT	.90	.89	.74	.81	.73	.69	-.37	-.47	.70
MUSIC	.80	.73	.68	.73	.82	.70	-.49	-.60	.69

Table 6. CORE Flow: External Validity (Motivation and Engagement) Correlations

	Participation	Enjoyment	Buoyancy	Aspirations	Adaptive Cognitions	Adaptive Behaviors	Impeding Cognitions	Maladaptive Behaviors	Mean Absolute r
CORE FLOW									
GENERAL SCHOOL (Embedded CORE)	.56	.71	.42	.68	.74	.83	-.11	-.79	.61
MATHEMATICS (Independent CORE)	.49	.58	.15	.42	.67	.68	-.23	-.72	.49
EXTRACURRICULAR (Independent CORE)	.25	.13	.20	.12	.23	.18	-.10	-.15	.17

f) Conclusion: The potential uses of the Flow Scales

The triad of Flow Scales developed by Jackson and colleagues (e.g., Jackson & Eklund, 2002; Jackson, Martin, & Eklund, 2008; Martin & Jackson, 2008) provides researchers and practitioners with a good choice of measurement options for assessing flow. The 36-item, or LONG Flow Scales, has been shown over a number of studies to be robust instruments that provide a detailed assessment of the dimensional flow model. When a fine-grained description of flow characteristics according to the dimensional flow model of Csikszentmihalyi (1990) is desired, then the LONG Flow Scales are the best option. The LONG scales are also ideally suited to intervention-based research, providing assessment of modifiable flow characteristics in the nine-order dimensional approach.

The SHORT Flow Scales provide a suitable tool for a brief assessment of flow from the nine-dimensional conceptualization. Grounded in a solid psychometric base, the 9-item SHORT Flow Scales are useful when an aggregate measure of the nine flow dimensions is desired. Studies aiming to capture aggregate or global flow that reflects broader parameters (e.g., challenge-skill balance, clear goals, sense of control etc.) may find this scale useful. The equally short, CORE Flow Scales provide a valid and reliable assessment of the central, or core, subjective experience of being in flow. Studies aiming to capture the very specific 'in the zone' experience may opt for core flow. The two brief Flow Scales offer different, but complementary ways of assessing flow. With half the variance between them unexplained (Martin & Jackson, 2008), they are clearly not the same construct. Given the generally strong psychometric properties across all three scales, their internal and external validity, decision-making regarding which scale to use should be determined by the purpose of a given study. LONG, SHORT, and CORE flow offer different, but complementary ways of assessing flow, and should open up more possibilities for including flow as a focal construct in research across a diverse range of settings.

Chapter 5: Flow Scales' score profiles

a) Descriptive profiles

In this chapter, we present descriptive data on Flow Scale scores obtained across a diverse range of activities. The data presented are illustrative of the types of scores, and scoring patterns, obtained with the questionnaires across the groups that have been sampled to date. For example, aggregate descriptive data collected on the DFS-2 and FSS-2 are presented in Tables 7 and 13 respectively. Note that these item-average scale scores have a possible range of 1 to 5. In all instances, the average values for the total subscale scores fall above the midpoint of 3. Tables 8 through 17 (excluding Table 13) present descriptive statistics for LONG flow on various activity categorizations, including sport, exercise, yoga, creative and performing arts.

Table 18 presents aggregate data for SHORT flow in physical activity (sport and exercise), yoga, music, and work. Table 19 presents aggregate data for the CORE Flow Scales in school extracurricular and sport samples.

Although the sampling was quite wide-ranging for the data presented in this chapter, it was in no way random or representative, and thus should be regarded as descriptive. As more data are collected with the different versions of the flow scales, it should be possible to add to these flow databases, and to do so across a broad range of settings. Researchers who collect data with the flow scales are invited to submit their data for inclusion in future revisions of this manual, and will be acknowledged for any data submitted for such purposes.

b) Standardized scoring tables for selected flow scales

Once a raw score has been calculated for each Flow factor, depending on the particular target activity and sample under focus, this raw score can be converted to a T-score. Unlike raw scores, T-scores on one factor are more readily compared with T-scores on another factor. Hence, converting scores to T-scores has the advantage of placing each factor on an approximately common metric. Using non-normalised T-scores equates the means and standard deviations of the different scores for each Flow factor but does not affect the shape of their distributions. T-scores have a mean of 50 and a standard deviation of 10.

T-scores are provided in this Manual (see below) for:

- LONG Dispositional Flow (Physical Activity)
- LONG State Flow (Physical Activity)
- LONG Dispositional Flow (Yoga)
- CORE Flow (Extracurricular Activity)
- SHORT Dispositional Flow (Physical Activity)
- SHORT State Flow (Physical Activity)

If you deem your sample or its target activity comparable to those in the standardized tables, then you can consider converting raw scores to T-scores. However, if your sample or its activities deviate markedly from the ones standardized here, then using raw scores may be preferable.

It is important to note that this approach is not without its limitations. First, it assumes that no one factor is systematically higher or lower than another. In reality, this is not the case – it is clear that some factors evince higher rates of agreement than others. Second, this approach assumes that the shape of distributions for each factor is the same. In reality, this is not the case either – for example, the skew of a number of factors are different. Hence, some care should be taken when interpreting T-scores.

Descriptive tables.

A. LONG Flow - Dispositional (DFS) Tables

Table 7. DFS Descriptive Statistics: Composite sample of participants across performance settings

	N	Min	Max	Mean	SD
Flow	4921	1.22	5.00	3.76	0.44
Challenge-Skill Balance	5369	1.00	5.00	3.71	0.58
Merging of Action and Awareness	5366	1.00	5.00	3.44	0.70
Clear Goals	5376	1.00	5.00	3.87	0.64
Unambiguous Feedback	5392	1.00	5.00	3.82	0.64
Concentration on Task at Hand	5437	1.00	5.00	3.67	0.64
Sense of Control	5377	1.00	5.00	3.75	0.62
Loss of Self-Consciousness	5424	1.00	5.00	3.65	0.93
Time Transformation	5396	1.00	5.00	3.61	0.78
Autotelic Experience	5417	1.00	5.00	4.32	0.58

Table 8. DFS Descriptive Statistics: Physical Activity Sample

	N	Min	Max	Mean	SD
Flow	1717	1.22	5.00	3.78	0.44
Challenge-Skill Balance	1717	1.25	5.00	3.76	0.61
Merging of Action and Awareness	1717	1.25	5.00	3.74	0.63
Clear Goals	1717	1.00	5.00	4.04	0.61
Unambiguous Feedback	1717	1.00	5.00	3.94	0.64
Concentration on Task at Hand	1717	1.25	5.00	3.69	0.65
Sense of Control	1717	1.00	5.00	3.82	0.60
Loss of Self-Consciousness	1717	1.00	5.00	3.38	0.84
Time Transformation	1717	1.00	5.00	3.48	0.75
Autotelic Experience	1717	1.00	5.00	4.19	0.61

Table 9. DFS Descriptive Statistics: Yoga sample

	N	Min	Max	Mean	SD
Flow	2668	1.22	5	3.78	0.43
Challenge-Skill Balance	3116	1.00	5	3.7	0.57
Merging of Action and Awareness	3113	1.00	5	3.28	0.69
Clear Goals	3123	1.00	5	3.79	0.61
Unambiguous Feedback	3139	1.00	5	3.79	0.62
Concentration on Task at Hand	3184	1.00	5	3.67	0.63
Sense of Control	3124	1.00	5	3.74	0.61
Loss of Self-Consciousness	3171	1.00	5	3.9	0.88
Time Transformation	3144	1.00	5	3.69	0.78
Autotelic Experience	3164	1.00	5	4.42	0.52

Table 10. DFS Descriptive Statistics: Creative and Performing Arts sample

	N	Min	Max	Mean	SD
Flow	372	2.19	5.00	3.56	0.48
Challenge-Skill Balance	372	2.00	5.00	3.62	0.58
Merging of Action and Awareness	372	1.00	5.00	3.37	0.66
Clear Goals	372	1.50	5.00	3.80	0.77
Unambiguous Feedback	372	1.25	5.00	3.60	0.72
Concentration on Task at Hand	372	1.25	5.00	3.56	0.71
Sense of Control	372	1.50	5.00	3.49	0.71
Loss of Self-Consciousness	372	1.00	5.00	3.03	0.91
Time Transformation	371	1.00	5.00	3.56	0.88
Autotelic Experience	372	1.33	5.00	4.01	0.74

Table 11. DFS Descriptive Statistics: Sport sample*

	N	Min	Max	Mean	SD
Flow	1452	1.22	5.00	3.79	0.43
Challenge-Skill Balance	1452	1.25	5.00	3.80	0.59
Merging of Action and Awareness	1452	1.25	5.00	3.76	0.60
Clear Goals	1452	1.00	5.00	4.05	0.60
Unambiguous Feedback	1452	1.00	5.00	3.96	0.63
Concentration on Task at Hand	1452	1.50	5.00	3.72	0.63
Sense of Control	1452	1.00	5.00	3.80	0.59
Loss of Self-Consciousness	1452	1.00	5.00	3.36	0.83
Time Transformation	1452	1.00	5.00	3.47	0.75
Autotelic Experience	1452	1.00	5.00	4.20	0.58

Table 12. DFS Descriptive Statistics: Exercise sample*

	N	Min	Max	Mean	SD
Flow	265	2.17	5.00	3.74	0.49
Challenge-Skill Balance	265	1.25	5.00	3.56	0.68
Merging of Action and Awareness	265	1.25	5.00	3.63	0.76
Clear Goals	265	2.25	5.00	4.01	0.66
Unambiguous Feedback	265	1.75	5.00	3.85	0.65
Concentration on Task at Hand	265	1.25	5.00	3.56	0.77
Sense of Control	265	1.75	5.00	3.89	0.66
Loss of Self-Consciousness	265	1.00	5.00	3.53	0.90
Time Transformation	265	1.25	5.00	3.55	0.76
Autotelic Experience	265	1.75	5.00	4.14	0.71

* Note. Sport and Exercise samples are sub-samples of the Physical Activity sample presented in Table 8.

B. LONG Flow - State (FSS) Tables

Table 13. FSS Descriptive Statistics: Composite sample of participants from a range of performance settings

	N	Min	Max	Mean	SD
Flow	1544	1.31	5.00	3.75	0.50
Challenge-Skill Balance	1544	1.25	5.00	3.68	0.68
Merging of Action and Awareness	1544	1.00	5.00	3.48	0.85
Clear Goals	1544	1.25	5.00	4.01	0.64
Unambiguous Feedback	1544	1.25	5.00	3.87	0.65
Concentration on Task at Hand	1544	1.00	5.00	3.71	0.81
Sense of Control	1544	1.00	5.00	3.72	0.76
Loss of Self-Consciousness	1544	1.00	5.00	3.87	0.91
Time Transformation	1544	1.00	5.00	3.44	0.81
Autotelic Experience	1544	1.00	5.00	4.02	0.78

Table 14. FSS Descriptive Statistics: Physical Activity sample

	N	Min	Max	Mean	SD
Flow	1311	1.31	5.00	3.76	0.51
Challenge-Skill Balance	1311	1.25	5.00	3.70	0.69
Merging of Action and Awareness	1311	1.00	5.00	3.56	0.82
Clear Goals	1311	1.25	5.00	4.03	0.64
Unambiguous Feedback	1311	1.25	5.00	3.88	0.66
Concentration on Task at Hand	1311	1.00	5.00	3.70	0.81
Sense of Control	1311	1.00	5.00	3.73	0.77
Loss of Self-Consciousness	1311	1.00	5.00	3.89	0.89
Time Transformation	1311	1.00	5.00	3.41	0.81
Autotelic Experience	1311	1.00	5.00	4.00	0.79

Table 15. FSS Descriptive Statistics: Yoga sample

	N	Min	Max	Mean	SD
Flow	142	2.75	4.64	3.76	0.41
Challenge-Skill Balance	142	1.75	5.00	3.60	0.66
Merging of Action and Awareness	142	1.00	5.00	2.98	0.87
Clear Goals	142	2.25	5.00	3.89	0.57
Unambiguous Feedback	142	2.00	5.00	3.85	0.55
Concentration on Task at Hand	142	2.00	5.00	3.75	0.80
Sense of Control	142	2.00	5.00	3.72	0.70
Loss of Self-Consciousness	142	2.00	5.00	4.16	0.76
Time Transformation	142	1.00	5.00	3.64	0.76
Autotelic Experience	142	2.75	5.00	4.30	0.57

Table 16. FSS Descriptive Statistics: Sport sample

	N	Min	Max	Mean	SD
Flow	858	1.31	5.00	3.75	0.51
Challenge-Skill Balance	858	1.25	5.00	3.69	0.69
Merging of Action and Awareness	858	1.00	5.00	3.63	0.77
Clear Goals	858	1.25	5.00	4.06	0.65
Unambiguous Feedback	858	1.25	5.00	3.86	0.66
Concentration on Task at Hand	858	1.00	5.00	3.70	0.78
Sense of Control	858	1.00	5.00	3.70	0.76
Loss of Self-Consciousness	858	1.00	5.00	3.86	0.90
Time Transformation	858	1.00	5.00	3.34	0.81
Autotelic Experience	858	1.00	5.00	3.91	0.83

Table 17. FSS Descriptive Statistics: Exercise sample

	N	Min	Max	Mean	SD
Flow	453	1.86	4.97	3.80	0.51
Challenge-Skill Balance	453	1.25	5.00	3.74	0.69
Merging of Action and Awareness	453	1.00	5.00	3.42	0.91
Clear Goals	453	1.50	5.00	3.98	0.63
Unambiguous Feedback	453	1.75	5.00	3.90	0.67
Concentration on Task at Hand	453	1.00	5.00	3.69	0.85
Sense of Control	453	1.00	5.00	3.80	0.77
Loss of Self-Consciousness	453	1.00	5.00	3.96	0.88
Time Transformation	453	1.00	5.00	3.55	0.81
Autotelic Experience	453	1.25	5.00	4.18	0.67

C) Short and Core Flow Tables

Table 18. Short Flow Descriptive Statistics

	N	Min	Max	Mean	SD
Short Flow Dispositional					
Physical Activity	616	2.22	5.00	3.82	0.49
Sport Activity	495	2.22	5.00	3.82	0.48
Exercise Activity	121	2.44	4.78	3.79	0.52
Rescaled Data					
Music	219	1.78	5.00	3.95	0.72
Work	631	2.22	5.00	4.09	0.56
Short Flow State					
Physical Activity	605	1.22	5.00	3.77	0.56
Sport Activity	359	1.22	5.00	3.68	0.55
Exercise Activity	246	1.56	5.00	3.88	0.56
Yoga	185	2.56	4.89	3.85	0.45

Table 19. Core Flow Descriptive Statistics

	N	Min	Max	Mean	SD
Dispositional					
School Extra-Curricular Activity	2202	1.30	5.00	4.41	0.59
State					
Sport Activity	220	1.00	5.00	3.37	0.74

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL PHYSICAL ACTIVITY

LONG DISPOSITIONAL PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.77		M=3.74		M=4.04		M=3.94		M=3.69		M=3.82		M=3.38		M=3.48		M=4.19		M=3.78	
SD=.61		SD=.63		SD=.61		SD=.64		SD=.65		SD=.60		SD=.84		SD=.75		SD=.61		SD=.44	
1.00	4.59	1.00	6.51	1.00	0.16	1.00	4.06	1.00	8.62	1.00	3.00	1.00	21.67	1.00	16.93	1.00	0	1.00	0
1.05	5.41	1.05	7.30	1.05	0.98	1.05	4.84	1.05	9.38	1.05	3.83	1.05	22.26	1.05	17.60	1.05	0	1.05	0
1.10	6.23	1.10	8.10	1.10	1.80	1.10	5.63	1.10	10.15	1.10	4.67	1.10	22.86	1.10	18.27	1.10	0	1.10	0
1.15	7.05	1.15	8.89	1.15	2.62	1.15	6.41	1.15	10.92	1.15	5.50	1.15	23.45	1.15	18.93	1.15	0.16	1.15	0
1.20	7.87	1.20	9.68	1.20	3.44	1.20	7.19	1.20	11.69	1.20	6.33	1.20	24.05	1.20	19.60	1.20	0.98	1.20	0
1.25	8.69	1.25	10.48	1.25	4.26	1.25	7.97	1.25	12.46	1.25	7.17	1.25	24.64	1.25	20.27	1.25	1.80	1.25	0
1.30	9.51	1.30	11.27	1.30	5.08	1.30	8.75	1.30	13.23	1.30	8.00	1.30	25.24	1.30	20.93	1.30	2.62	1.30	0
1.35	10.33	1.35	12.06	1.35	5.90	1.35	9.53	1.35	14.00	1.35	8.83	1.35	25.83	1.35	21.60	1.35	3.44	1.35	0
1.40	11.15	1.40	12.86	1.40	6.72	1.40	10.31	1.40	14.77	1.40	9.67	1.40	26.43	1.40	22.27	1.40	4.26	1.40	0
1.45	11.97	1.45	13.65	1.45	7.54	1.45	11.09	1.45	15.54	1.45	10.50	1.45	27.02	1.45	22.93	1.45	5.08	1.45	0
1.50	12.79	1.50	14.44	1.50	8.36	1.50	11.88	1.50	16.31	1.50	11.33	1.50	27.62	1.50	23.60	1.50	5.90	1.50	0
1.55	13.61	1.55	15.24	1.55	9.18	1.55	12.66	1.55	17.08	1.55	12.17	1.55	28.21	1.55	24.27	1.55	6.72	1.55	0
1.60	14.43	1.60	16.03	1.60	10.00	1.60	13.44	1.60	17.85	1.60	13.00	1.60	28.81	1.60	24.93	1.60	7.54	1.60	0.45
1.65	15.25	1.65	16.83	1.65	10.82	1.65	14.22	1.65	18.62	1.65	13.83	1.65	29.40	1.65	25.60	1.65	8.36	1.65	1.59
1.70	16.07	1.70	17.62	1.70	11.64	1.70	15.00	1.70	19.38	1.70	14.67	1.70	30.00	1.70	26.27	1.70	9.18	1.70	2.73
1.75	16.89	1.75	18.41	1.75	12.46	1.75	15.78	1.75	20.15	1.75	15.50	1.75	30.60	1.75	26.93	1.75	10.00	1.75	3.86
1.80	17.70	1.80	19.21	1.80	13.28	1.80	16.56	1.80	20.92	1.80	16.33	1.80	31.19	1.80	27.60	1.80	10.82	1.80	5.00
1.85	18.52	1.85	20.00	1.85	14.10	1.85	17.34	1.85	21.69	1.85	17.17	1.85	31.79	1.85	28.27	1.85	11.64	1.85	6.14
1.90	19.34	1.90	20.79	1.90	14.92	1.90	18.13	1.90	22.46	1.90	18.00	1.90	32.38	1.90	28.93	1.90	12.46	1.90	7.27
1.95	20.16	1.95	21.59	1.95	15.74	1.95	18.91	1.95	23.23	1.95	18.83	1.95	32.98	1.95	29.60	1.95	13.28	1.95	8.41

Note that negative T-scores have been fixed to zero

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL PHYSICAL ACTIVITY cont.

LONG DISPOSITIONAL PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.77		M=3.74		M=4.04		M=3.94		M=3.69		M=3.82		M=3.38		M=3.48		M=4.19		M=3.78	
SD=.61		SD=.63		SD=.61		SD=.64		SD=.65		SD=.60		SD=.84		SD=.75		SD=.61		SD=.44	
2.00	20.98	2.00	22.38	2.00	16.56	2.00	19.69	2.00	24.00	2.00	19.67	2.00	33.57	2.00	30.27	2.00	14.10	2.00	9.55
2.05	21.80	2.05	23.17	2.05	17.38	2.05	20.47	2.05	24.77	2.05	20.50	2.05	34.17	2.05	30.93	2.05	14.92	2.05	10.68
2.10	22.62	2.10	23.97	2.10	18.20	2.10	21.25	2.10	25.54	2.10	21.33	2.10	34.76	2.10	31.60	2.10	15.74	2.10	11.82
2.15	23.44	2.15	24.76	2.15	19.02	2.15	22.03	2.15	26.31	2.15	22.17	2.15	35.36	2.15	32.27	2.15	16.56	2.15	12.95
2.20	24.26	2.20	25.56	2.20	19.84	2.20	22.81	2.20	27.08	2.20	23.00	2.20	35.95	2.20	32.93	2.20	17.38	2.20	14.09
2.25	25.08	2.25	26.35	2.25	20.66	2.25	23.59	2.25	27.85	2.25	23.83	2.25	36.55	2.25	33.60	2.25	18.20	2.25	15.23
2.30	25.90	2.30	27.14	2.30	21.48	2.30	24.38	2.30	28.62	2.30	24.67	2.30	37.14	2.30	34.27	2.30	19.02	2.30	16.36
2.35	26.72	2.35	27.94	2.35	22.30	2.35	25.16	2.35	29.38	2.35	25.50	2.35	37.74	2.35	34.93	2.35	19.84	2.35	17.50
2.40	27.54	2.40	28.73	2.40	23.11	2.40	25.94	2.40	30.15	2.40	26.33	2.40	38.33	2.40	35.60	2.40	20.66	2.40	18.64
2.45	28.36	2.45	29.52	2.45	23.93	2.45	26.72	2.45	30.92	2.45	27.17	2.45	38.93	2.45	36.27	2.45	21.48	2.45	19.77
2.50	29.18	2.50	30.32	2.50	24.75	2.50	27.50	2.50	31.69	2.50	28.00	2.50	39.52	2.50	36.93	2.50	22.30	2.50	20.91
2.55	30.00	2.55	31.11	2.55	25.57	2.55	28.28	2.55	32.46	2.55	28.83	2.55	40.12	2.55	37.60	2.55	23.11	2.55	22.05
2.60	30.82	2.60	31.90	2.60	26.39	2.60	29.06	2.60	33.23	2.60	29.67	2.60	40.71	2.60	38.27	2.60	23.93	2.60	23.18
2.65	31.64	2.65	32.70	2.65	27.21	2.65	29.84	2.65	34.00	2.65	30.50	2.65	41.31	2.65	38.93	2.65	24.75	2.65	24.32
2.70	32.46	2.70	33.49	2.70	28.03	2.70	30.63	2.70	34.77	2.70	31.33	2.70	41.90	2.70	39.60	2.70	25.57	2.70	25.45
2.75	33.28	2.75	34.29	2.75	28.85	2.75	31.41	2.75	35.54	2.75	32.17	2.75	42.50	2.75	40.27	2.75	26.39	2.75	26.59
2.80	34.10	2.80	35.08	2.80	29.67	2.80	32.19	2.80	36.31	2.80	33.00	2.80	43.10	2.80	40.93	2.80	27.21	2.80	27.73
2.85	34.92	2.85	35.87	2.85	30.49	2.85	32.97	2.85	37.08	2.85	33.83	2.85	43.69	2.85	41.60	2.85	28.03	2.85	28.86
2.90	35.74	2.90	36.67	2.90	31.31	2.90	33.75	2.90	37.85	2.90	34.67	2.90	44.29	2.90	42.27	2.90	28.85	2.90	30.00
2.95	36.56	2.95	37.46	2.95	32.13	2.95	34.53	2.95	38.62	2.95	35.50	2.95	44.88	2.95	42.93	2.95	29.67	2.95	31.14

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL PHYSICAL ACTIVITY cont.

LONG DISPOSITIONAL PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.77		M=3.74		M=4.04		M=3.94		M=3.69		M=3.82		M=3.38		M=3.48		M=4.19		M=3.78	
SD=.61		SD=.63		SD=.61		SD=.64		SD=.65		SD=.60		SD=.84		SD=.75		SD=.61		SD=.44	
3.00	37.38	3.00	38.25	3.00	32.95	3.00	35.31	3.00	39.38	3.00	36.33	3.00	45.48	3.00	43.60	3.00	30.49	3.00	32.27
3.05	38.20	3.05	39.05	3.05	33.77	3.05	36.09	3.05	40.15	3.05	37.17	3.05	46.07	3.05	44.27	3.05	31.31	3.05	33.41
3.10	39.02	3.10	39.84	3.10	34.59	3.10	36.88	3.10	40.92	3.10	38.00	3.10	46.67	3.10	44.93	3.10	32.13	3.10	34.55
3.15	39.84	3.15	40.63	3.15	35.41	3.15	37.66	3.15	41.69	3.15	38.83	3.15	47.26	3.15	45.60	3.15	32.95	3.15	35.68
3.20	40.66	3.20	41.43	3.20	36.23	3.20	38.44	3.20	42.46	3.20	39.67	3.20	47.86	3.20	46.27	3.20	33.77	3.20	36.82
3.25	41.48	3.25	42.22	3.25	37.05	3.25	39.22	3.25	43.23	3.25	40.50	3.25	48.45	3.25	46.93	3.25	34.59	3.25	37.95
3.30	42.30	3.30	43.02	3.30	37.87	3.30	40.00	3.30	44.00	3.30	41.33	3.30	49.05	3.30	47.60	3.30	35.41	3.30	39.09
3.35	43.11	3.35	43.81	3.35	38.69	3.35	40.78	3.35	44.77	3.35	42.17	3.35	49.64	3.35	48.27	3.35	36.23	3.35	40.23
3.40	43.93	3.40	44.60	3.40	39.51	3.40	41.56	3.40	45.54	3.40	43.00	3.40	50.24	3.40	48.93	3.40	37.05	3.40	41.36
3.45	44.75	3.45	45.40	3.45	40.33	3.45	42.34	3.45	46.31	3.45	43.83	3.45	50.83	3.45	49.60	3.45	37.87	3.45	42.50
3.50	45.57	3.50	46.19	3.50	41.15	3.50	43.13	3.50	47.08	3.50	44.67	3.50	51.43	3.50	50.27	3.50	38.69	3.50	43.64
3.55	46.39	3.55	46.98	3.55	41.97	3.55	43.91	3.55	47.85	3.55	45.50	3.55	52.02	3.55	50.93	3.55	39.51	3.55	44.77
3.60	47.21	3.60	47.78	3.60	42.79	3.60	44.69	3.60	48.62	3.60	46.33	3.60	52.62	3.60	51.60	3.60	40.33	3.60	45.91
3.65	48.03	3.65	48.57	3.65	43.61	3.65	45.47	3.65	49.38	3.65	47.17	3.65	53.21	3.65	52.27	3.65	41.15	3.65	47.05
3.70	48.85	3.70	49.37	3.70	44.43	3.70	46.25	3.70	50.15	3.70	48.00	3.70	53.81	3.70	52.93	3.70	41.97	3.70	48.18
3.75	49.67	3.75	50.16	3.75	45.25	3.75	47.03	3.75	50.92	3.75	48.83	3.75	54.40	3.75	53.60	3.75	42.79	3.75	49.32
3.80	50.49	3.80	50.95	3.80	46.07	3.80	47.81	3.80	51.69	3.80	49.67	3.80	55.00	3.80	54.27	3.80	43.61	3.80	50.45
3.85	51.31	3.85	51.75	3.85	46.89	3.85	48.59	3.85	52.46	3.85	50.50	3.85	55.60	3.85	54.93	3.85	44.43	3.85	51.59
3.90	52.13	3.90	52.54	3.90	47.70	3.90	49.38	3.90	53.23	3.90	51.33	3.90	56.19	3.90	55.60	3.90	45.25	3.90	52.73
3.95	52.95	3.95	53.33	3.95	48.52	3.95	50.16	3.95	54.00	3.95	52.17	3.95	56.79	3.95	56.27	3.95	46.07	3.95	53.86

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL PHYSICAL ACTIVITY cont.

LONG DISPOSITIONAL PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.77		M=3.74		M=4.04		M=3.94		M=3.69		M=3.82		M=3.38		M=3.48		M=4.19		M=3.78	
SD=.61		SD=.63		SD=.61		SD=.64		SD=.65		SD=.60		SD=.84		SD=.75		SD=.61		SD=.44	
4.00	53.77	4.00	54.13	4.00	49.34	4.00	50.94	4.00	54.77	4.00	53.00	4.00	57.38	4.00	56.93	4.00	46.89	4.00	55.00
4.05	54.59	4.05	54.92	4.05	50.16	4.05	51.72	4.05	55.54	4.05	53.83	4.05	57.98	4.05	57.60	4.05	47.70	4.05	56.14
4.10	55.41	4.10	55.71	4.10	50.98	4.10	52.50	4.10	56.31	4.10	54.67	4.10	58.57	4.10	58.27	4.10	48.52	4.10	57.27
4.15	56.23	4.15	56.51	4.15	51.80	4.15	53.28	4.15	57.08	4.15	55.50	4.15	59.17	4.15	58.93	4.15	49.34	4.15	58.41
4.20	57.05	4.20	57.30	4.20	52.62	4.20	54.06	4.20	57.85	4.20	56.33	4.20	59.76	4.20	59.60	4.20	50.16	4.20	59.55
4.25	57.87	4.25	58.10	4.25	53.44	4.25	54.84	4.25	58.62	4.25	57.17	4.25	60.36	4.25	60.27	4.25	50.98	4.25	60.68
4.30	58.69	4.30	58.89	4.30	54.26	4.30	55.63	4.30	59.38	4.30	58.00	4.30	60.95	4.30	60.93	4.30	51.80	4.30	61.82
4.35	59.51	4.35	59.68	4.35	55.08	4.35	56.41	4.35	60.15	4.35	58.83	4.35	61.55	4.35	61.60	4.35	52.62	4.35	62.95
4.40	60.33	4.40	60.48	4.40	55.90	4.40	57.19	4.40	60.92	4.40	59.67	4.40	62.14	4.40	62.27	4.40	53.44	4.40	64.09
4.45	61.15	4.45	61.27	4.45	56.72	4.45	57.97	4.45	61.69	4.45	60.50	4.45	62.74	4.45	62.93	4.45	54.26	4.45	65.23
4.50	61.97	4.50	62.06	4.50	57.54	4.50	58.75	4.50	62.46	4.50	61.33	4.50	63.33	4.50	63.60	4.50	55.08	4.50	66.36
4.55	62.79	4.55	62.86	4.55	58.36	4.55	59.53	4.55	63.23	4.55	62.17	4.55	63.93	4.55	64.27	4.55	55.90	4.55	67.50
4.60	63.61	4.60	63.65	4.60	59.18	4.60	60.31	4.60	64.00	4.60	63.00	4.60	64.52	4.60	64.93	4.60	56.72	4.60	68.64
4.65	64.43	4.65	64.44	4.65	60.00	4.65	61.09	4.65	64.77	4.65	63.83	4.65	65.12	4.65	65.60	4.65	57.54	4.65	69.77
4.70	65.25	4.70	65.24	4.70	60.82	4.70	61.88	4.70	65.54	4.70	64.67	4.70	65.71	4.70	66.27	4.70	58.36	4.70	70.91
4.75	66.07	4.75	66.03	4.75	61.64	4.75	62.66	4.75	66.31	4.75	65.50	4.75	66.31	4.75	66.93	4.75	59.18	4.75	72.05
4.80	66.89	4.80	66.83	4.80	62.46	4.80	63.44	4.80	67.08	4.80	66.33	4.80	66.90	4.80	67.60	4.80	60.00	4.80	73.18
4.85	67.70	4.85	67.62	4.85	63.28	4.85	64.22	4.85	67.85	4.85	67.17	4.85	67.50	4.85	68.27	4.85	60.82	4.85	74.32
4.90	68.52	4.90	68.41	4.90	64.10	4.90	65.00	4.90	68.62	4.90	68.00	4.90	68.10	4.90	68.93	4.90	61.64	4.90	75.45
4.95	69.34	4.95	69.21	4.95	64.92	4.95	65.78	4.95	69.38	4.95	68.83	4.95	68.69	4.95	69.60	4.95	62.46	4.95	76.59
5.00	70.16	5.00	70.00	5.00	65.74	5.00	66.56	5.00	70.15	5.00	69.67	5.00	69.29	5.00	70.27	5.00	63.28	5.00	77.73

b) Standardized scoring tables for selected flow scales: LONG STATE PHYSICAL ACTIVITY

LONG STATE PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.56		M=4.03		M=3.88		M=3.70		M=3.73		M=3.89		M=3.41		M=4.00		M=3.76	
SD=.69		SD=.82		SD=.65		SD=.66		SD=.81		SD=.77		SD=.89		SD=.81		SD=.79		SD=.51	
1.00	10.87	1.00	18.78	1.00	3.38	1.00	6.36	1.00	16.67	1.00	14.55	1.00	17.53	1.00	20.25	1.00	12.03	1.00	0
1.05	11.59	1.05	19.39	1.05	4.15	1.05	7.12	1.05	17.28	1.05	15.19	1.05	18.09	1.05	20.86	1.05	12.66	1.05	0
1.10	12.32	1.10	20.00	1.10	4.92	1.10	7.88	1.10	17.90	1.10	15.84	1.10	18.65	1.10	21.48	1.10	13.29	1.10	0
1.15	13.04	1.15	20.61	1.15	5.69	1.15	8.64	1.15	18.52	1.15	16.49	1.15	19.21	1.15	22.10	1.15	13.92	1.15	0
1.20	13.77	1.20	21.22	1.20	6.46	1.20	9.39	1.20	19.14	1.20	17.14	1.20	19.78	1.20	22.72	1.20	14.56	1.20	0
1.25	14.49	1.25	21.83	1.25	7.23	1.25	10.15	1.25	19.75	1.25	17.79	1.25	20.34	1.25	23.33	1.25	15.19	1.25	0.78
1.30	15.22	1.30	22.44	1.30	8.00	1.30	10.91	1.30	20.37	1.30	18.44	1.30	20.90	1.30	23.95	1.30	15.82	1.30	1.76
1.35	15.94	1.35	23.05	1.35	8.77	1.35	11.67	1.35	20.99	1.35	19.09	1.35	21.46	1.35	24.57	1.35	16.46	1.35	2.75
1.40	16.67	1.40	23.66	1.40	9.54	1.40	12.42	1.40	21.60	1.40	19.74	1.40	22.02	1.40	25.19	1.40	17.09	1.40	3.73
1.45	17.39	1.45	24.27	1.45	10.31	1.45	13.18	1.45	22.22	1.45	20.39	1.45	22.58	1.45	25.80	1.45	17.72	1.45	4.71
1.50	18.12	1.50	24.88	1.50	11.08	1.50	13.94	1.50	22.84	1.50	21.04	1.50	23.15	1.50	26.42	1.50	18.35	1.50	5.69
1.55	18.84	1.55	25.49	1.55	11.85	1.55	14.70	1.55	23.46	1.55	21.69	1.55	23.71	1.55	27.04	1.55	18.99	1.55	6.67
1.60	19.57	1.60	26.10	1.60	12.62	1.60	15.45	1.60	24.07	1.60	22.34	1.60	24.27	1.60	27.65	1.60	19.62	1.60	7.65
1.65	20.29	1.65	26.71	1.65	13.38	1.65	16.21	1.65	24.69	1.65	22.99	1.65	24.83	1.65	28.27	1.65	20.25	1.65	8.63
1.70	21.01	1.70	27.32	1.70	14.15	1.70	16.97	1.70	25.31	1.70	23.64	1.70	25.39	1.70	28.89	1.70	20.89	1.70	9.61
1.75	21.74	1.75	27.93	1.75	14.92	1.75	17.73	1.75	25.93	1.75	24.29	1.75	25.96	1.75	29.51	1.75	21.52	1.75	10.59
1.80	22.46	1.80	28.54	1.80	15.69	1.80	18.48	1.80	26.54	1.80	24.94	1.80	26.52	1.80	30.12	1.80	22.15	1.80	11.57
1.85	23.19	1.85	29.15	1.85	16.46	1.85	19.24	1.85	27.16	1.85	25.58	1.85	27.08	1.85	30.74	1.85	22.78	1.85	12.55
1.90	23.91	1.90	29.76	1.90	17.23	1.90	20.00	1.90	27.78	1.90	26.23	1.90	27.64	1.90	31.36	1.90	23.42	1.90	13.53
1.95	24.64	1.95	30.37	1.95	18.00	1.95	20.76	1.95	28.40	1.95	26.88	1.95	28.20	1.95	31.98	1.95	24.05	1.95	14.51

Note that negative T-scores have been fixed to zero

b) Standardized scoring tables for selected flow scales: LONG STATE PHYSICAL ACTIVITY cont.

LONG STATE PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.56		M=4.03		M=3.88		M=3.70		M=3.73		M=3.89		M=3.41		M=4.00		M=3.76	
SD=.69		SD=.82		SD=.65		SD=.66		SD=.81		SD=.77		SD=.89		SD=.81		SD=.79		SD=.51	
2.00	25.36	2.00	30.98	2.00	18.77	2.00	21.52	2.00	29.01	2.00	27.53	2.00	28.76	2.00	32.59	2.00	24.68	2.00	15.49
2.05	26.09	2.05	31.59	2.05	19.54	2.05	22.27	2.05	29.63	2.05	28.18	2.05	29.33	2.05	33.21	2.05	25.32	2.05	16.47
2.10	26.81	2.10	32.20	2.10	20.31	2.10	23.03	2.10	30.25	2.10	28.83	2.10	29.89	2.10	33.83	2.10	25.95	2.10	17.45
2.15	27.54	2.15	32.80	2.15	21.08	2.15	23.79	2.15	30.86	2.15	29.48	2.15	30.45	2.15	34.44	2.15	26.58	2.15	18.43
2.20	28.26	2.20	33.41	2.20	21.85	2.20	24.55	2.20	31.48	2.20	30.13	2.20	31.01	2.20	35.06	2.20	27.22	2.20	19.41
2.25	28.99	2.25	34.02	2.25	22.62	2.25	25.30	2.25	32.10	2.25	30.78	2.25	31.57	2.25	35.68	2.25	27.85	2.25	20.39
2.30	29.71	2.30	34.63	2.30	23.38	2.30	26.06	2.30	32.72	2.30	31.43	2.30	32.13	2.30	36.30	2.30	28.48	2.30	21.37
2.35	30.43	2.35	35.24	2.35	24.15	2.35	26.82	2.35	33.33	2.35	32.08	2.35	32.70	2.35	36.91	2.35	29.11	2.35	22.35
2.40	31.16	2.40	35.85	2.40	24.92	2.40	27.58	2.40	33.95	2.40	32.73	2.40	33.26	2.40	37.53	2.40	29.75	2.40	23.33
2.45	31.88	2.45	36.46	2.45	25.69	2.45	28.33	2.45	34.57	2.45	33.38	2.45	33.82	2.45	38.15	2.45	30.38	2.45	24.31
2.50	32.61	2.50	37.07	2.50	26.46	2.50	29.09	2.50	35.19	2.50	34.03	2.50	34.38	2.50	38.77	2.50	31.01	2.50	25.29
2.55	33.33	2.55	37.68	2.55	27.23	2.55	29.85	2.55	35.80	2.55	34.68	2.55	34.94	2.55	39.38	2.55	31.65	2.55	26.27
2.60	34.06	2.60	38.29	2.60	28.00	2.60	30.61	2.60	36.42	2.60	35.32	2.60	35.51	2.60	40.00	2.60	32.28	2.60	27.25
2.65	34.78	2.65	38.90	2.65	28.77	2.65	31.36	2.65	37.04	2.65	35.97	2.65	36.07	2.65	40.62	2.65	32.91	2.65	28.24
2.70	35.51	2.70	39.51	2.70	29.54	2.70	32.12	2.70	37.65	2.70	36.62	2.70	36.63	2.70	41.23	2.70	33.54	2.70	29.22
2.75	36.23	2.75	40.12	2.75	30.31	2.75	32.88	2.75	38.27	2.75	37.27	2.75	37.19	2.75	41.85	2.75	34.18	2.75	30.20
2.80	36.96	2.80	40.73	2.80	31.08	2.80	33.64	2.80	38.89	2.80	37.92	2.80	37.75	2.80	42.47	2.80	34.81	2.80	31.18
2.85	37.68	2.85	41.34	2.85	31.85	2.85	34.39	2.85	39.51	2.85	38.57	2.85	38.31	2.85	43.09	2.85	35.44	2.85	32.16
2.90	38.41	2.90	41.95	2.90	32.62	2.90	35.15	2.90	40.12	2.90	39.22	2.90	38.88	2.90	43.70	2.90	36.08	2.90	33.14
2.95	39.13	2.95	42.56	2.95	33.38	2.95	35.91	2.95	40.74	2.95	39.87	2.95	39.44	2.95	44.32	2.95	36.71	2.95	34.12

b) Standardized scoring tables for selected flow scales: LONG STATE PHYSICAL ACTIVITY cont.

LONG STATE PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.56		M=4.03		M=3.88		M=3.70		M=3.73		M=3.89		M=3.41		M=4.00		M=3.76	
SD=.69		SD=.82		SD=.65		SD=.66		SD=.81		SD=.77		SD=.89		SD=.81		SD=.79		SD=.51	
3.00	39.86	3.00	43.17	3.00	34.15	3.00	36.67	3.00	41.36	3.00	40.52	3.00	40.00	3.00	44.94	3.00	37.34	3.00	35.10
3.05	40.58	3.05	43.78	3.05	34.92	3.05	37.42	3.05	41.98	3.05	41.17	3.05	40.56	3.05	45.56	3.05	37.97	3.05	36.08
3.10	41.30	3.10	44.39	3.10	35.69	3.10	38.18	3.10	42.59	3.10	41.82	3.10	41.12	3.10	46.17	3.10	38.61	3.10	37.06
3.15	42.03	3.15	45.00	3.15	36.46	3.15	38.94	3.15	43.21	3.15	42.47	3.15	41.69	3.15	46.79	3.15	39.24	3.15	38.04
3.20	42.75	3.20	45.61	3.20	37.23	3.20	39.70	3.20	43.83	3.20	43.12	3.20	42.25	3.20	47.41	3.20	39.87	3.20	39.02
3.25	43.48	3.25	46.22	3.25	38.00	3.25	40.45	3.25	44.44	3.25	43.77	3.25	42.81	3.25	48.02	3.25	40.51	3.25	40.00
3.30	44.20	3.30	46.83	3.30	38.77	3.30	41.21	3.30	45.06	3.30	44.42	3.30	43.37	3.30	48.64	3.30	41.14	3.30	40.98
3.35	44.93	3.35	47.44	3.35	39.54	3.35	41.97	3.35	45.68	3.35	45.06	3.35	43.93	3.35	49.26	3.35	41.77	3.35	41.96
3.40	45.65	3.40	48.05	3.40	40.31	3.40	42.73	3.40	46.30	3.40	45.71	3.40	44.49	3.40	49.88	3.40	42.41	3.40	42.94
3.45	46.38	3.45	48.66	3.45	41.08	3.45	43.48	3.45	46.91	3.45	46.36	3.45	45.06	3.45	50.49	3.45	43.04	3.45	43.92
3.50	47.10	3.50	49.27	3.50	41.85	3.50	44.24	3.50	47.53	3.50	47.01	3.50	45.62	3.50	51.11	3.50	43.67	3.50	44.90
3.55	47.83	3.55	49.88	3.55	42.62	3.55	45.00	3.55	48.15	3.55	47.66	3.55	46.18	3.55	51.73	3.55	44.30	3.55	45.88
3.60	48.55	3.60	50.49	3.60	43.38	3.60	45.76	3.60	48.77	3.60	48.31	3.60	46.74	3.60	52.35	3.60	44.94	3.60	46.86
3.65	49.28	3.65	51.10	3.65	44.15	3.65	46.52	3.65	49.38	3.65	48.96	3.65	47.30	3.65	52.96	3.65	45.57	3.65	47.84
3.70	50.00	3.70	51.71	3.70	44.92	3.70	47.27	3.70	50.00	3.70	49.61	3.70	47.87	3.70	53.58	3.70	46.20	3.70	48.82
3.75	50.72	3.75	52.32	3.75	45.69	3.75	48.03	3.75	50.62	3.75	50.26	3.75	48.43	3.75	54.20	3.75	46.84	3.75	49.80
3.80	51.45	3.80	52.93	3.80	46.46	3.80	48.79	3.80	51.23	3.80	50.91	3.80	48.99	3.80	54.81	3.80	47.47	3.80	50.78
3.85	52.17	3.85	53.54	3.85	47.23	3.85	49.55	3.85	51.85	3.85	51.56	3.85	49.55	3.85	55.43	3.85	48.10	3.85	51.76
3.90	52.90	3.90	54.15	3.90	48.00	3.90	50.30	3.90	52.47	3.90	52.21	3.90	50.11	3.90	56.05	3.90	48.73	3.90	52.75
3.95	53.62	3.95	54.76	3.95	48.77	3.95	51.06	3.95	53.09	3.95	52.86	3.95	50.67	3.95	56.67	3.95	49.37	3.95	53.73

b) Standardized scoring tables for selected flow scales: LONG STATE PHYSICAL ACTIVITY cont.

LONG STATE PHYSICAL ACTIVITY																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.56		M=4.03		M=3.88		M=3.70		M=3.73		M=3.89		M=3.41		M=4.00		M=3.76	
SD=.69		SD=.82		SD=.65		SD=.66		SD=.81		SD=.77		SD=.89		SD=.81		SD=.79		SD=.51	
4.00	54.35	4.00	55.37	4.00	49.54	4.00	51.82	4.00	53.70	4.00	53.51	4.00	51.24	4.00	57.28	4.00	50.00	4.00	54.71
4.05	55.07	4.05	55.98	4.05	50.31	4.05	52.58	4.05	54.32	4.05	54.16	4.05	51.80	4.05	57.90	4.05	50.63	4.05	55.69
4.10	55.80	4.10	56.59	4.10	51.08	4.10	53.33	4.10	54.94	4.10	54.81	4.10	52.36	4.10	58.52	4.10	51.27	4.10	56.67
4.15	56.52	4.15	57.20	4.15	51.85	4.15	54.09	4.15	55.56	4.15	55.45	4.15	52.92	4.15	59.14	4.15	51.90	4.15	57.65
4.20	57.25	4.20	57.80	4.20	52.62	4.20	54.85	4.20	56.17	4.20	56.10	4.20	53.48	4.20	59.75	4.20	52.53	4.20	58.63
4.25	57.97	4.25	58.41	4.25	53.38	4.25	55.61	4.25	56.79	4.25	56.75	4.25	54.04	4.25	60.37	4.25	53.16	4.25	59.61
4.30	58.70	4.30	59.02	4.30	54.15	4.30	56.36	4.30	57.41	4.30	57.40	4.30	54.61	4.30	60.99	4.30	53.80	4.30	60.59
4.35	59.42	4.35	59.63	4.35	54.92	4.35	57.12	4.35	58.02	4.35	58.05	4.35	55.17	4.35	61.60	4.35	54.43	4.35	61.57
4.40	60.14	4.40	60.24	4.40	55.69	4.40	57.88	4.40	58.64	4.40	58.70	4.40	55.73	4.40	62.22	4.40	55.06	4.40	62.55
4.45	60.87	4.45	60.85	4.45	56.46	4.45	58.64	4.45	59.26	4.45	59.35	4.45	56.29	4.45	62.84	4.45	55.70	4.45	63.53
4.50	61.59	4.50	61.46	4.50	57.23	4.50	59.39	4.50	59.88	4.50	60.00	4.50	56.85	4.50	63.46	4.50	56.33	4.50	64.51
4.55	62.32	4.55	62.07	4.55	58.00	4.55	60.15	4.55	60.49	4.55	60.65	4.55	57.42	4.55	64.07	4.55	56.96	4.55	65.49
4.60	63.04	4.60	62.68	4.60	58.77	4.60	60.91	4.60	61.11	4.60	61.30	4.60	57.98	4.60	64.69	4.60	57.59	4.60	66.47
4.65	63.77	4.65	63.29	4.65	59.54	4.65	61.67	4.65	61.73	4.65	61.95	4.65	58.54	4.65	65.31	4.65	58.23	4.65	67.45
4.70	64.49	4.70	63.90	4.70	60.31	4.70	62.42	4.70	62.35	4.70	62.60	4.70	59.10	4.70	65.93	4.70	58.86	4.70	68.43
4.75	65.22	4.75	64.51	4.75	61.08	4.75	63.18	4.75	62.96	4.75	63.25	4.75	59.66	4.75	66.54	4.75	59.49	4.75	69.41
4.80	65.94	4.80	65.12	4.80	61.85	4.80	63.94	4.80	63.58	4.80	63.90	4.80	60.22	4.80	67.16	4.80	60.13	4.80	70.39
4.85	66.67	4.85	65.73	4.85	62.62	4.85	64.70	4.85	64.20	4.85	64.55	4.85	60.79	4.85	67.78	4.85	60.76	4.85	71.37
4.90	67.39	4.90	66.34	4.90	63.38	4.90	65.45	4.90	64.81	4.90	65.19	4.90	61.35	4.90	68.40	4.90	61.39	4.90	72.35
4.95	68.12	4.95	66.95	4.95	64.15	4.95	66.21	4.95	65.43	4.95	65.84	4.95	61.91	4.95	69.01	4.95	62.03	4.95	73.33
5.00	68.84	5.00	67.56	5.00	64.92	5.00	66.97	5.00	66.05	5.00	66.49	5.00	62.47	5.00	69.63	5.00	62.66	5.00	74.31

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL YOGA

LONG DISPOSITIONAL YOGA																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.28		M=3.79		M=3.79		M=3.67		M=3.74		M=3.90		M=3.69		M=4.42		M=3.78	
SD=.57		SD=.69		SD=.61		SD=.62		SD=.63		SD=.61		SD=.88		SD=.78		SD=.52		SD=.43	
1.00	2.63	1.00	16.96	1.00	4.26	1.00	5.00	1.00	7.62	1.00	5.08	1.00	17.05	1.00	15.51	1.00	0	1.00	0
1.05	3.51	1.05	17.68	1.05	5.08	1.05	5.81	1.05	8.41	1.05	5.90	1.05	17.61	1.05	16.15	1.05	0	1.05	0
1.10	4.39	1.10	18.41	1.10	5.90	1.10	6.61	1.10	9.21	1.10	6.72	1.10	18.18	1.10	16.79	1.10	0	1.10	0
1.15	5.26	1.15	19.13	1.15	6.72	1.15	7.42	1.15	10.00	1.15	7.54	1.15	18.75	1.15	17.44	1.15	0	1.15	0
1.20	6.14	1.20	19.86	1.20	7.54	1.20	8.23	1.20	10.79	1.20	8.36	1.20	19.32	1.20	18.08	1.20	0	1.20	0
1.25	7.02	1.25	20.58	1.25	8.36	1.25	9.03	1.25	11.59	1.25	9.18	1.25	19.89	1.25	18.72	1.25	0	1.25	0
1.30	7.89	1.30	21.30	1.30	9.18	1.30	9.84	1.30	12.38	1.30	10.00	1.30	20.45	1.30	19.36	1.30	0	1.30	0
1.35	8.77	1.35	22.03	1.35	10.00	1.35	10.65	1.35	13.17	1.35	10.82	1.35	21.02	1.35	20.00	1.35	0	1.35	0
1.40	9.65	1.40	22.75	1.40	10.82	1.40	11.45	1.40	13.97	1.40	11.64	1.40	21.59	1.40	20.64	1.40	0	1.40	0
1.45	10.53	1.45	23.48	1.45	11.64	1.45	12.26	1.45	14.76	1.45	12.46	1.45	22.16	1.45	21.28	1.45	0	1.45	0
1.50	11.40	1.50	24.20	1.50	12.46	1.50	13.06	1.50	15.56	1.50	13.28	1.50	22.73	1.50	21.92	1.50	0	1.50	0
1.55	12.28	1.55	24.93	1.55	13.28	1.55	13.87	1.55	16.35	1.55	14.10	1.55	23.30	1.55	22.56	1.55	0	1.55	0
1.60	13.16	1.60	25.65	1.60	14.10	1.60	14.68	1.60	17.14	1.60	14.92	1.60	23.86	1.60	23.21	1.60	0	1.60	0
1.65	14.04	1.65	26.38	1.65	14.92	1.65	15.48	1.65	17.94	1.65	15.74	1.65	24.43	1.65	23.85	1.65	0	1.65	0.47
1.70	14.91	1.70	27.10	1.70	15.74	1.70	16.29	1.70	18.73	1.70	16.56	1.70	25.00	1.70	24.49	1.70	0	1.70	1.63
1.75	15.79	1.75	27.83	1.75	16.56	1.75	17.10	1.75	19.52	1.75	17.38	1.75	25.57	1.75	25.13	1.75	0	1.75	2.79
1.80	16.67	1.80	28.55	1.80	17.38	1.80	17.90	1.80	20.32	1.80	18.20	1.80	26.14	1.80	25.77	1.80	0	1.80	3.95
1.85	17.54	1.85	29.28	1.85	18.20	1.85	18.71	1.85	21.11	1.85	19.02	1.85	26.70	1.85	26.41	1.85	0.58	1.85	5.12
1.90	18.42	1.90	30.00	1.90	19.02	1.90	19.52	1.90	21.90	1.90	19.84	1.90	27.27	1.90	27.05	1.90	1.54	1.90	6.28
1.95	19.30	1.95	30.72	1.95	19.84	1.95	20.32	1.95	22.70	1.95	20.66	1.95	27.84	1.95	27.69	1.95	2.50	1.95	7.44

Note that negative T-scores have been fixed to zero

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL YOGA cont.

LONG DISPOSITIONAL YOGA																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.28		M=3.79		M=3.79		M=3.67		M=3.74		M=3.90		M=3.69		M=4.42		M=3.78	
SD=.57		SD=.69		SD=.61		SD=.62		SD=.63		SD=.61		SD=.88		SD=.78		SD=.52		SD=.43	
2.00	20.18	2.00	31.45	2.00	20.66	2.00	21.13	2.00	23.49	2.00	21.48	2.00	28.41	2.00	28.33	2.00	3.46	2.00	8.60
2.05	21.05	2.05	32.17	2.05	21.48	2.05	21.94	2.05	24.29	2.05	22.30	2.05	28.98	2.05	28.97	2.05	4.42	2.05	9.77
2.10	21.93	2.10	32.90	2.10	22.30	2.10	22.74	2.10	25.08	2.10	23.11	2.10	29.55	2.10	29.62	2.10	5.38	2.10	10.93
2.15	22.81	2.15	33.62	2.15	23.11	2.15	23.55	2.15	25.87	2.15	23.93	2.15	30.11	2.15	30.26	2.15	6.35	2.15	12.09
2.20	23.68	2.20	34.35	2.20	23.93	2.20	24.35	2.20	26.67	2.20	24.75	2.20	30.68	2.20	30.90	2.20	7.31	2.20	13.26
2.25	24.56	2.25	35.07	2.25	24.75	2.25	25.16	2.25	27.46	2.25	25.57	2.25	31.25	2.25	31.54	2.25	8.27	2.25	14.42
2.30	25.44	2.30	35.80	2.30	25.57	2.30	25.97	2.30	28.25	2.30	26.39	2.30	31.82	2.30	32.18	2.30	9.23	2.30	15.58
2.35	26.32	2.35	36.52	2.35	26.39	2.35	26.77	2.35	29.05	2.35	27.21	2.35	32.39	2.35	32.82	2.35	10.19	2.35	16.74
2.40	27.19	2.40	37.25	2.40	27.21	2.40	27.58	2.40	29.84	2.40	28.03	2.40	32.95	2.40	33.46	2.40	11.15	2.40	17.91
2.45	28.07	2.45	37.97	2.45	28.03	2.45	28.39	2.45	30.63	2.45	28.85	2.45	33.52	2.45	34.10	2.45	12.12	2.45	19.07
2.50	28.95	2.50	38.70	2.50	28.85	2.50	29.19	2.50	31.43	2.50	29.67	2.50	34.09	2.50	34.74	2.50	13.08	2.50	20.23
2.55	29.82	2.55	39.42	2.55	29.67	2.55	30.00	2.55	32.22	2.55	30.49	2.55	34.66	2.55	35.38	2.55	14.04	2.55	21.40
2.60	30.70	2.60	40.14	2.60	30.49	2.60	30.81	2.60	33.02	2.60	31.31	2.60	35.23	2.60	36.03	2.60	15.00	2.60	22.56
2.65	31.58	2.65	40.87	2.65	31.31	2.65	31.61	2.65	33.81	2.65	32.13	2.65	35.80	2.65	36.67	2.65	15.96	2.65	23.72
2.70	32.46	2.70	41.59	2.70	32.13	2.70	32.42	2.70	34.60	2.70	32.95	2.70	36.36	2.70	37.31	2.70	16.92	2.70	24.88
2.75	33.33	2.75	42.32	2.75	32.95	2.75	33.23	2.75	35.40	2.75	33.77	2.75	36.93	2.75	37.95	2.75	17.88	2.75	26.05
2.80	34.21	2.80	43.04	2.80	33.77	2.80	34.03	2.80	36.19	2.80	34.59	2.80	37.50	2.80	38.59	2.80	18.85	2.80	27.21
2.85	35.09	2.85	43.77	2.85	34.59	2.85	34.84	2.85	36.98	2.85	35.41	2.85	38.07	2.85	39.23	2.85	19.81	2.85	28.37
2.90	35.96	2.90	44.49	2.90	35.41	2.90	35.65	2.90	37.78	2.90	36.23	2.90	38.64	2.90	39.87	2.90	20.77	2.90	29.53
2.95	36.84	2.95	45.22	2.95	36.23	2.95	36.45	2.95	38.57	2.95	37.05	2.95	39.20	2.95	40.51	2.95	21.73	2.95	30.70

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL YOGA cont.

LONG DISPOSITIONAL YOGA																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.28		M=3.79		M=3.79		M=3.67		M=3.74		M=3.90		M=3.69		M=4.42		M=3.78	
SD=.57		SD=.69		SD=.61		SD=.62		SD=.63		SD=.61		SD=.88		SD=.78		SD=.52		SD=.43	
3.00	37.72	3.00	45.94	3.00	37.05	3.00	37.26	3.00	39.37	3.00	37.87	3.00	39.77	3.00	41.15	3.00	22.69	3.00	31.86
3.05	38.60	3.05	46.67	3.05	37.87	3.05	38.06	3.05	40.16	3.05	38.69	3.05	40.34	3.05	41.79	3.05	23.65	3.05	33.02
3.10	39.47	3.10	47.39	3.10	38.69	3.10	38.87	3.10	40.95	3.10	39.51	3.10	40.91	3.10	42.44	3.10	24.62	3.10	34.19
3.15	40.35	3.15	48.12	3.15	39.51	3.15	39.68	3.15	41.75	3.15	40.33	3.15	41.48	3.15	43.08	3.15	25.58	3.15	35.35
3.20	41.23	3.20	48.84	3.20	40.33	3.20	40.48	3.20	42.54	3.20	41.15	3.20	42.05	3.20	43.72	3.20	26.54	3.20	36.51
3.25	42.11	3.25	49.57	3.25	41.15	3.25	41.29	3.25	43.33	3.25	41.97	3.25	42.61	3.25	44.36	3.25	27.50	3.25	37.67
3.30	42.98	3.30	50.29	3.30	41.97	3.30	42.10	3.30	44.13	3.30	42.79	3.30	43.18	3.30	45.00	3.30	28.46	3.30	38.84
3.35	43.86	3.35	51.01	3.35	42.79	3.35	42.90	3.35	44.92	3.35	43.61	3.35	43.75	3.35	45.64	3.35	29.42	3.35	40.00
3.40	44.74	3.40	51.74	3.40	43.61	3.40	43.71	3.40	45.71	3.40	44.43	3.40	44.32	3.40	46.28	3.40	30.38	3.40	41.16
3.45	45.61	3.45	52.46	3.45	44.43	3.45	44.52	3.45	46.51	3.45	45.25	3.45	44.89	3.45	46.92	3.45	31.35	3.45	42.33
3.50	46.49	3.50	53.19	3.50	45.25	3.50	45.32	3.50	47.30	3.50	46.07	3.50	45.45	3.50	47.56	3.50	32.31	3.50	43.49
3.55	47.37	3.55	53.91	3.55	46.07	3.55	46.13	3.55	48.10	3.55	46.89	3.55	46.02	3.55	48.21	3.55	33.27	3.55	44.65
3.60	48.25	3.60	54.64	3.60	46.89	3.60	46.94	3.60	48.89	3.60	47.70	3.60	46.59	3.60	48.85	3.60	34.23	3.60	45.81
3.65	49.12	3.65	55.36	3.65	47.70	3.65	47.74	3.65	49.68	3.65	48.52	3.65	47.16	3.65	49.49	3.65	35.19	3.65	46.98
3.70	50.00	3.70	56.09	3.70	48.52	3.70	48.55	3.70	50.48	3.70	49.34	3.70	47.73	3.70	50.13	3.70	36.15	3.70	48.14
3.75	50.88	3.75	56.81	3.75	49.34	3.75	49.35	3.75	51.27	3.75	50.16	3.75	48.30	3.75	50.77	3.75	37.12	3.75	49.30
3.80	51.75	3.80	57.54	3.80	50.16	3.80	50.16	3.80	52.06	3.80	50.98	3.80	48.86	3.80	51.41	3.80	38.08	3.80	50.47
3.85	52.63	3.85	58.26	3.85	50.98	3.85	50.97	3.85	52.86	3.85	51.80	3.85	49.43	3.85	52.05	3.85	39.04	3.85	51.63
3.90	53.51	3.90	58.99	3.90	51.80	3.90	51.77	3.90	53.65	3.90	52.62	3.90	50.00	3.90	52.69	3.90	40.00	3.90	52.79
3.95	54.39	3.95	59.71	3.95	52.62	3.95	52.58	3.95	54.44	3.95	53.44	3.95	50.57	3.95	53.33	3.95	40.96	3.95	53.95

b) Standardized scoring tables for selected flow scales: LONG DISPOSITIONAL YOGA cont.

LONG DISPOSITIONAL YOGA																			
Challenge		**Merge**		**Goal**		**Unambiguous**		**Concentrate**		**Control**		**Self-conscious**		**Time**		**Autotelic**		**Flow**	
Raw	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**	**Raw**	**T**
M=3.70		M=3.28		M=3.79		M=3.79		M=3.67		M=3.74		M=3.90		M=3.69		M=4.42		M=3.78	
SD=.57		SD=.69		SD=.61		SD=.62		SD=.63		SD=.61		SD=.88		SD=.78		SD=.52		SD=.43	
4.00	55.26	4.00	60.43	4.00	53.44	4.00	53.39	4.00	55.24	4.00	54.26	4.00	51.14	4.00	53.97	4.00	41.92	4.00	55.12
4.05	56.14	4.05	61.16	4.05	54.26	4.05	54.19	4.05	56.03	4.05	55.08	4.05	51.70	4.05	54.62	4.05	42.88	4.05	56.28
4.10	57.02	4.10	61.88	4.10	55.08	4.10	55.00	4.10	56.83	4.10	55.90	4.10	52.27	4.10	55.26	4.10	43.85	4.10	57.44
4.15	57.89	4.15	62.61	4.15	55.90	4.15	55.81	4.15	57.62	4.15	56.72	4.15	52.84	4.15	55.90	4.15	44.81	4.15	58.60
4.20	58.77	4.20	63.33	4.20	56.72	4.20	56.61	4.20	58.41	4.20	57.54	4.20	53.41	4.20	56.54	4.20	45.77	4.20	59.77
4.25	59.65	4.25	64.06	4.25	57.54	4.25	57.42	4.25	59.21	4.25	58.36	4.25	53.98	4.25	57.18	4.25	46.73	4.25	60.93
4.30	60.53	4.30	64.78	4.30	58.36	4.30	58.23	4.30	60.00	4.30	59.18	4.30	54.55	4.30	57.82	4.30	47.69	4.30	62.09
4.35	61.40	4.35	65.51	4.35	59.18	4.35	59.03	4.35	60.79	4.35	60.00	4.35	55.11	4.35	58.46	4.35	48.65	4.35	63.26
4.40	62.28	4.40	66.23	4.40	60.00	4.40	59.84	4.40	61.59	4.40	60.82	4.40	55.68	4.40	59.10	4.40	49.62	4.40	64.42
4.45	63.16	4.45	66.96	4.45	60.82	4.45	60.65	4.45	62.38	4.45	61.64	4.45	56.25	4.45	59.74	4.45	50.58	4.45	65.58
4.50	64.04	4.50	67.68	4.50	61.64	4.50	61.45	4.50	63.17	4.50	62.46	4.50	56.82	4.50	60.38	4.50	51.54	4.50	66.74
4.55	64.91	4.55	68.41	4.55	62.46	4.55	62.26	4.55	63.97	4.55	63.28	4.55	57.39	4.55	61.03	4.55	52.50	4.55	67.91
4.60	65.79	4.60	69.13	4.60	63.28	4.60	63.06	4.60	64.76	4.60	64.10	4.60	57.95	4.60	61.67	4.60	53.46	4.60	69.07
4.65	66.67	4.65	69.86	4.65	64.10	4.65	63.87	4.65	65.56	4.65	64.92	4.65	58.52	4.65	62.31	4.65	54.42	4.65	70.23
4.70	67.54	4.70	70.58	4.70	64.92	4.70	64.68	4.70	66.35	4.70	65.74	4.70	59.09	4.70	62.95	4.70	55.38	4.70	71.40
4.75	68.42	4.75	71.30	4.75	65.74	4.75	65.48	4.75	67.14	4.75	66.56	4.75	59.66	4.75	63.59	4.75	56.35	4.75	72.56
4.80	69.30	4.80	72.03	4.80	66.56	4.80	66.29	4.80	67.94	4.80	67.38	4.80	60.23	4.80	64.23	4.80	57.31	4.80	73.72
4.85	70.18	4.85	72.75	4.85	67.38	4.85	67.10	4.85	68.73	4.85	68.20	4.85	60.80	4.85	64.87	4.85	58.27	4.85	74.88
4.90	71.05	4.90	73.48	4.90	68.20	4.90	67.90	4.90	69.52	4.90	69.02	4.90	61.36	4.90	65.51	4.90	59.23	4.90	76.05
4.95	71.93	4.95	74.20	4.95	69.02	4.95	68.71	4.95	70.32	4.95	69.84	4.95	61.93	4.95	66.15	4.95	60.19	4.95	77.21
5.00	72.81	5.00	74.93	5.00	69.84	5.00	69.52	5.00	71.11	5.00	70.66	5.00	62.50	5.00	66.79	5.00	61.15	5.00	78.37

b) Standardized scoring tables for selected flow scales: CORE AND SHORT

Extracurricular CORE			Physical SHORT DFS			Physical SHORT FSS	
Raw	T		Raw	T		Raw	T
M=4.41			M=3.82			M=3.77	
SD=.59			SD=.49			SD=.56	
1.00	0		1.00	0		1.00	0.54
1.05	0		1.05	0		1.05	1.43
1.10	0		1.10	0		1.10	2.32
1.15	0		1.15	0		1.15	3.21
1.20	0		1.20	0		1.20	4.11
1.25	0		1.25	0		1.25	5.00
1.30	0		1.30	0		1.30	5.89
1.35	0		1.35	0		1.35	6.79
1.40	0		1.40	0.61		1.40	7.68
1.45	0		1.45	1.63		1.45	8.57
1.50	0.68		1.50	2.65		1.50	9.46
1.55	1.53		1.55	3.67		1.55	10.36
1.60	2.37		1.60	4.69		1.60	11.25
1.65	3.22		1.65	5.71		1.65	12.14
1.70	4.07		1.70	6.73		1.70	13.04
1.75	4.92		1.75	7.76		1.75	13.93
1.80	5.76		1.80	8.78		1.80	14.82
1.85	6.61		1.85	9.80		1.85	15.71
1.90	7.46		1.90	10.82		1.90	16.61
1.95	8.31		1.95	11.84		1.95	17.50
2.00	9.15		2.00	12.86		2.00	18.39
2.05	10.00		2.05	13.88		2.05	19.29
2.10	10.85		2.10	14.90		2.10	20.18
2.15	11.69		2.15	15.92		2.15	21.07
2.20	12.54		2.20	16.94		2.20	21.96
2.25	13.39		2.25	17.96		2.25	22.86
2.30	14.24		2.30	18.98		2.30	23.75
2.35	15.08		2.35	20.00		2.35	24.64
2.40	15.93		2.40	21.02		2.40	25.54
2.45	16.78		2.45	22.04		2.45	26.43

Note that negative T-scores have been fixed to zero

b) Standardized scoring tables for selected flow scales: CORE AND SHORT cont.

Extracurricular CORE			Physical SHORT DFS			Physical SHORT FSS	
Raw	T		Raw	T		Raw	T
M=4.41			M=3.82			M=3.77	
SD=.59			SD=.49			SD=.56	
2.50	17.63		2.50	23.06		2.50	27.32
2.55	18.47		2.55	24.08		2.55	28.21
2.60	19.32		2.60	25.10		2.60	29.11
2.65	20.17		2.65	26.12		2.65	30.00
2.70	21.02		2.70	27.14		2.70	30.89
2.75	21.86		2.75	28.16		2.75	31.79
2.80	22.71		2.80	29.18		2.80	32.68
2.85	23.56		2.85	30.20		2.85	33.57
2.90	24.41		2.90	31.22		2.90	34.46
2.95	25.25		2.95	32.24		2.95	35.36
3.00	26.10		3.00	33.27		3.00	36.25
3.05	26.95		3.05	34.29		3.05	37.14
3.10	27.80		3.10	35.31		3.10	38.04
3.15	28.64		3.15	36.33		3.15	38.93
3.20	29.49		3.20	37.35		3.20	39.82
3.25	30.34		3.25	38.37		3.25	40.71
3.30	31.19		3.30	39.39		3.30	41.61
3.35	32.03		3.35	40.41		3.35	42.50
3.40	32.88		3.40	41.43		3.40	43.39
3.45	33.73		3.45	42.45		3.45	44.29
3.50	34.58		3.50	43.47		3.50	45.18
3.55	35.42		3.55	44.49		3.55	46.07
3.60	36.27		3.60	45.51		3.60	46.96
3.65	37.12		3.65	46.53		3.65	47.86
3.70	37.97		3.70	47.55		3.70	48.75
3.75	38.81		3.75	48.57		3.75	49.64
3.80	39.66		3.80	49.59		3.80	50.54
3.85	40.51		3.85	50.61		3.85	51.43
3.90	41.36		3.90	51.63		3.90	52.32
3.95	42.20		3.95	52.65		3.95	53.21

b) Standardized scoring tables for selected flow scales: CORE AND SHORT cont.

Extracurricular CORE			Physical SHORT DFS			Physical SHORT FSS	
Raw	T		Raw	T		Raw	T
M=4.41			M=3.82			M=3.77	
SD=.59			SD=.49			SD=.56	
4.00	43.05		4.00	53.67		4.00	54.11
4.05	43.90		4.05	54.69		4.05	55.00
4.10	44.75		4.10	55.71		4.10	55.89
4.15	45.59		4.15	56.73		4.15	56.79
4.20	46.44		4.20	57.76		4.20	57.68
4.25	47.29		4.25	58.78		4.25	58.57
4.30	48.14		4.30	59.80		4.30	59.46
4.35	48.98		4.35	60.82		4.35	60.36
4.40	49.83		4.40	61.84		4.40	61.25
4.45	50.68		4.45	62.86		4.45	62.14
4.50	51.53		4.50	63.88		4.50	63.04
4.55	52.37		4.55	64.90		4.55	63.93
4.60	53.22		4.60	65.92		4.60	64.82
4.65	54.07		4.65	66.94		4.65	65.71
4.70	54.92		4.70	67.96		4.70	66.61
4.75	55.76		4.75	68.98		4.75	67.50
4.80	56.61		4.80	70.00		4.80	68.39
4.85	57.46		4.85	71.02		4.85	69.29
4.90	58.31		4.90	72.04		4.90	70.18
4.95	59.15		4.95	73.06		4.95	71.07
5.00	60.00		5.00	74.08		5.00	71.96

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About the Authors

Susan A. Jackson (www.bodyandmindflow.com) is internationally recognized as having made significant contributions to the development of flow research, particularly in sport and performance settings. Having a strong interest in flow since first researching the concept in the late 1980s, Sue has published widely on the topic, including numerous scholarly articles and a book for lay audiences, *Flow in Sports: The Keys to Optimal Experiences and Performances,* co-authored with the founder of flow theory, Mihaly Csikszentmihalyi. This FLOW manual represents the current stage of the research that Sue and colleagues have undertaken on developing and validating self-report instruments to assess flow. Sue is a registered psychologist, and consults in the sport and performance psychology area. She is also a qualified yoga teacher, and freelance writer and editor.

Robert C. Eklund (http://www.epls.fsu.edu/faculty_index.htm) was involved in the development of the revised flow scales (Jackson & Eklund, 2002). He also worked extensively on the evaluation of psychometric properties of other inventories commonly employed in sport and exercise psychology including the Athlete Burnout Inventory (e.g., Cresswell & Eklund, 2006), Social Physique Anxiety Scale (e.g., Eklund, Mack, & Hart, 1996; Maïano, Morin, Eklund, R.C., Monthuy-Blanc, Garbarino, & Stephan, 2010), the Physical Self Perception Profile (e.g., Eklund, Whitehead, & Welk, 1997), the Causal Dimension Scale-II (Crocker, Eklund, & Graham, 2002), and inventories employed to evaluate coping strategies (Eklund, Grove, & Heard, 1998; Grove, Eklund & Heard, 1997). While widely published, Bob has also been active in editorial roles in the field. In addition to being the current editor-in-chief of the *Journal of Sport & Exercise Psychology*, Bob is a past associate/section editor for *Research Quarterly for Exercise and Sport*, and the *Journal of Applied Sport Psychology*. Bob currently serves on the editorial boards of other sport and exercise psychology journals.

Andrew J. Martin (http://fdp.edsw.usyd.edu.au/users/amartin) is Professorial Research Fellow and Australian Research Council Future Fellow (2010-2014) at the University of Sydney specializing in motivation, engagement, achievement, and quantitative research methods. He is also a Registered Psychologist. Andrew is recognized for psychological and educational research in achievement motivation and for the quantitative methods he brings to the study of applied phenomena (including sport and exercise psychology). Based on International Rankings of the Most Productive Educational Psychologists (2003-2008), Andrew is 9th most published across all peer reviewed journals and the most highly published researcher from an Australian university across all peer reviewed journals (Source: Jones et al., *Contemporary Educational Psychology*, in press). He is Associate Editor of the *Journal of Educational Psychology* and Associate Editor of the *British Journal of Educational Psychology*.

Appendices

The Flow Scales

a. LONG Dispositional Flow Scale (DFS-2)-Physical
b. LONG Flow State Scale (FSS-2)-Physical
c. LONG Dispositional Flow Scale (DFS-2)-General
d. LONG Flow State Scale (FSS-2)-General
e. SHORT Dispositional Flow Scale (S DFS-2)
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Scoring the Flow Scales

i. Scoring LONG Flow Dispositional
j. Scoring LONG Flow State
k. Scoring SHORT Flow SDFS-2
l. Scoring SFSS-2
m. Scoring the CORE DFS-2 & CORE FSS-2

LONG Dispositional Flow Scale (DFS-2)–Physical

Please answer the following questions in relation to your experience in your chosen activity. These questions relate to the thoughts and feelings you may experience during participation in your activity. You may experience these characteristics some of the time, all of the time, or none of the time. There are no right or wrong answers. Think about how often you experience each characteristic during your activity, then circle the number that best matches your experience.

	When participating in: _____ *(Name Event/Activity)*	**Never**	**Rarely**	**Sometimes**	**Frequently**	**Always**
1	I am challenged, but I believe my skills will allow me to meet the challenge	1	2	3	4	5
2	I make the correct movements without thinking about trying to do so	1	2	3	4	5
3	I know clearly what I want to do	1	2	3	4	5
4	It is really clear to me how my performance is going	1	2	3	4	5
5	My attention is focused entirely on what I am doing	1	2	3	4	5
6	I have a sense of control over what I am doing	1	2	3	4	5
7	I am not concerned with what others may be thinking of me	1	2	3	4	5
8	Time seems to alter (either slows down or speeds up)	1	2	3	4	5
9	I really enjoy the experience	1	2	3	4	5
10	My abilities match the high challenge of the situation	1	2	3	4	5
11	Things just seem to happen automatically	1	2	3	4	5
12	I have a strong sense of what I want to do	1	2	3	4	5
13	I am aware of how well I am performing	1	2	3	4	5
14	It is no effort to keep my mind on what is happening	1	2	3	4	5
15	I feel like I can control what I am doing	1	2	3	4	5
16	I am not concerned with how others may be evaluating me	1	2	3	4	5

cont…		Never	Rarely	Sometimes	Frequently	Always
17	The way time passes seems to be different from normal	1	2	3	4	5
18	I love the feeling of the performance and want to capture it again	1	2	3	4	5
19	I feel I am competent enough to meet the high demands of the situation	1	2	3	4	5
20	I perform automatically, without thinking too much	1	2	3	4	5
21	I know what I want to achieve	1	2	3	4	5
22	I have a good idea while I am performing about how well I am doing	1	2	3	4	5
23	I have total concentration	1	2	3	4	5
24	I have a feeling of total control	1	2	3	4	5
25	I am not concerned with how I am presenting myself	1	2	3	4	5
26	It feels like time goes by quickly	1	2	3	4	5
27	The experience leaves me feeling great	1	2	3	4	5
28	The challenge and my skills are at an equally high level	1	2	3	4	5
29	I do things spontaneously and automatically without having to think	1	2	3	4	5
30	My goals are clearly defined	1	2	3	4	5
31	I can tell by the way I am performing how well I am doing	1	2	3	4	5
32	I am completely focused on the task at hand	1	2	3	4	5
33	I feel in total control of my body	1	2	3	4	5
34	I am not worried about what others may be thinking of me	1	2	3	4	5
35	I lose my normal awareness of time	1	2	3	4	5
36	The experience is extremely rewarding	1	2	3	4	5

LONG Flow State Scale (FSS-2)–Physical

Please answer the following questions in relation to your experience in the event or activity you have just completed. These questions relate to the thoughts and feelings you may have experienced while taking part. There are no right or wrong answers. Think about how you felt during the event/activity, then answer the questions using the rating scale below. For each question, circle the number that best matches your experience.

During the: _____ *(Name Event/Activity)*		**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1	I was challenged, but I believed my skills would allow me to meet the challenge	1	2	3	4	5
2	I made the correct movements without thinking about trying to do so	1	2	3	4	5
3	I knew clearly what I wanted to do	1	2	3	4	5
4	It was really clear to me how my performance was going	1	2	3	4	5
5	My attention was focused entirely on what I was doing	1	2	3	4	5
6	I had a sense of control over what I was doing	1	2	3	4	5
7	I was not concerned with what others may have been thinking of me	1	2	3	4	5
8	Time seemed to alter (either slowed down or speeded up)	1	2	3	4	5
9	I really enjoyed the experience	1	2	3	4	5
10	My abilities matched the high challenge of the situation	1	2	3	4	5
11	Things just seemed to be happening automatically	1	2	3	4	5
12	I had a strong sense of what I wanted to do	1	2	3	4	5
13	I was aware of how well I was performing	1	2	3	4	5
14	It was no effort to keep my mind on what was happening	1	2	3	4	5
15	I felt like I could control what I was doing	1	2	3	4	5
16	I was not concerned with how others may have been evaluating me	1	2	3	4	5

cont…		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
17	The way time passed seemed to be different from normal	1	2	3	4	5
18	I loved the feeling of the performance and want to capture it again	1	2	3	4	5
19	I felt I was competent enough to meet the high demands of the situation	1	2	3	4	5
20	I performed automatically, without thinking too much	1	2	3	4	5
21	I knew what I wanted to achieve	1	2	3	4	5
22	I had a good idea while I was performing about how well I was doing	1	2	3	4	5
23	I had total concentration	1	2	3	4	5
24	I had a feeling of total control	1	2	3	4	5
25	I was not concerned with how I was presenting myself	1	2	3	4	5
26	It felt like time went by quickly	1	2	3	4	5
27	The experience left me feeling great	1	2	3	4	5
28	The challenge and my skills were at an equally high level	1	2	3	4	5
29	I did things spontaneously and automatically without having to think	1	2	3	4	5
30	My goals were clearly defined	1	2	3	4	5
31	I could tell by the way I was performing how well I was doing	1	2	3	4	5
32	I was completely focused on the task at hand	1	2	3	4	5
33	I felt in total control of my body	1	2	3	4	5
34	I was not worried about what others may have been thinking of me	1	2	3	4	5
35	I lost my normal awareness of time	1	2	3	4	5
36	I found the experience extremely rewarding	1	2	3	4	5

LONG Dispositional Flow Scale (DFS-2)–General

Please answer the following questions in relation to your experience in your chosen activity. These questions relate to the thoughts and feelings you may experience during participation in your activity. You may experience these characteristics some of the time, all of the time, or none of the time. There are no right or wrong answers. Think about how often you experience each characteristic during your activity, then circle the number that best matches your experience.

	When participating in: _____ *(Name Event/Activity)*	**Never**	**Rarely**	**Sometimes**	**Frequently**	**Always**
1	I am challenged, but I believe my skills will allow me to meet the challenge	1	2	3	4	5
2	I do things correctly without thinking about trying to do so	1	2	3	4	5
3	I know clearly what I want to do	1	2	3	4	5
4	It is really clear to me how I am going	1	2	3	4	5
5	My attention is focused entirely on what I am doing	1	2	3	4	5
6	I have a sense of control over what I am doing	1	2	3	4	5
7	I am not concerned with what others may be thinking of me	1	2	3	4	5
8	Time seems to alter (either slows down or speeds up)	1	2	3	4	5
9	I really enjoy the experience of what I am doing	1	2	3	4	5
10	My abilities match the challenge of what I am doing	1	2	3	4	5
11	Things just seem to happen automatically	1	2	3	4	5
12	I have a strong sense of what I want to do	1	2	3	4	5
13	I am aware of how well I am doing	1	2	3	4	5
14	It is no effort to keep my mind on what is happening	1	2	3	4	5
15	I feel like I can control what I am doing	1	2	3	4	5
16	I am not concerned with how others may be evaluating me	1	2	3	4	5

cont…		Never	Rarely	Sometimes	Frequently	Always
17	The way time passes seems to be different from normal	1	2	3	4	5
18	I love the feeling of what I am doing and want to capture this feeling again	1	2	3	4	5
19	I feel I am competent enough to meet the demands of the situation	1	2	3	4	5
20	I do things automatically, without thinking too much	1	2	3	4	5
21	I know what I want to achieve	1	2	3	4	5
22	I have a good idea about how well I am doing while I am involved in the task/activity	1	2	3	4	5
23	I have total concentration	1	2	3	4	5
24	I have a feeling of total control over what I am doing	1	2	3	4	5
25	I am not concerned with how I am presenting myself	1	2	3	4	5
26	It feels like time goes by quickly	1	2	3	4	5
27	The experience leaves me feeling great	1	2	3	4	5
28	The challenge and my skills are at an equally high level	1	2	3	4	5
29	I do things spontaneously and automatically without having to think	1	2	3	4	5
30	My goals are clearly defined	1	2	3	4	5
31	I can tell by the way things are progressing how well I am doing	1	2	3	4	5
32	I am completely focused on the task at hand	1	2	3	4	5
33	I feel in total control of my actions	1	2	3	4	5
34	I am not worried about what others may be thinking of me	1	2	3	4	5
35	I lose my normal awareness of time	1	2	3	4	5
36	The experience is extremely rewarding	1	2	3	4	5

LONG Flow State Scale (FSS-2)–General

Please answer the following questions in relation to your experience in the event or activity you have just completed. These questions relate to the thoughts and feelings you may have experienced while taking part. There are no right or wrong answers. Think about how you felt during the event/activity, then answer the questions using the rating scale below. For each question, circle the number that best matches your experience.

During the: _____ *(Name Event/Activity)*		**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1	I was challenged, but I believed my skills would allow me to meet the challenge	1	2	3	4	5
2	I did things correctly without thinking about trying to do so	1	2	3	4	5
3	I knew clearly what I wanted to do	1	2	3	4	5
4	It was really clear to me how I was going	1	2	3	4	5
5	My attention was focused entirely on what I was doing	1	2	3	4	5
6	I had a sense of control over what I was doing	1	2	3	4	5
7	I was not concerned with what others may have been thinking of me	1	2	3	4	5
8	Time seemed to alter (either slowed down or speeded up)	1	2	3	4	5
9	I really enjoyed the experience of what I was doing	1	2	3	4	5
10	My abilities matched the challenge of what I was doing	1	2	3	4	5
11	Things just seemed to be happening automatically	1	2	3	4	5
12	I had a strong sense of what I wanted to do	1	2	3	4	5
13	I was aware of how well I was doing	1	2	3	4	5
14	It was no effort to keep my mind on what was happening	1	2	3	4	5
15	I felt like I could control what I was doing	1	2	3	4	5
16	I was not concerned with how others may have been evaluating me	1	2	3	4	5

cont…		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
17	The way time passed seemed to be different from normal	1	2	3	4	5
18	I loved the feeling of what I was doing, and want to capture this feeling again	1	2	3	4	5
19	I felt I was competent enough to meet the demands of the situation	1	2	3	4	5
20	I did things automatically, without thinking too much	1	2	3	4	5
21	I knew what I wanted to achieve	1	2	3	4	5
22	I had a good idea about how well I was doing while I was involved in the task/activity	1	2	3	4	5
23	I had total concentration	1	2	3	4	5
24	I had a feeling of total control over what I was doing	1	2	3	4	5
25	I was not concerned with how I was presenting myself	1	2	3	4	5
26	It felt like time went by quickly	1	2	3	4	5
27	The experience left me feeling great	1	2	3	4	5
28	The challenge and my skills were at an equally high level	1	2	3	4	5
29	I did things spontaneously and automatically without having to think	1	2	3	4	5
30	My goals were clearly defined	1	2	3	4	5
31	I could tell by the way things were progressing how well I was doing	1	2	3	4	5
32	I was completely focused on the task at hand	1	2	3	4	5
33	I felt in total control of my actions	1	2	3	4	5
34	I was not worried about what others may have been thinking of me	1	2	3	4	5
35	I lost my normal awareness of time	1	2	3	4	5
36	I found the experience extremely rewarding	1	2	3	4	5

SHORT Dispositional Flow Scale (S DFS)

Please answer the following questions in relation to your experience in your chosen activity. These questions relate to the thoughts and feelings you may experience during participation in your activity. You may experience these characteristics some of the time, all of the time, or none of the time. There are no right or wrong answers. Think about how often you experience each characteristic during your activity, then circle the number that best matches your experience.

In general, when I take part in *(name your main activity):*_____

		Never	Rarely	Sometimes	Frequently	Always
1	I feel I am competent enough to meet the demands of the situation	1	2	3	4	5
2	I do things spontaneously and automatically without having to think	1	2	3	4	5
3	I have a strong sense of what I want to do	1	2	3	4	5
4	I have a good idea about how well I am doing while I am involved in the task/activity	1	2	3	4	5
5	I am completely focused on the task at hand	1	2	3	4	5
6	I have a feeling of total control over what I am doing	1	2	3	4	5
7	I am not worried about what others may be thinking of me	1	2	3	4	5
8	The way time passes seems to be different from normal	1	2	3	4	5
9	The experience is extremely rewarding	1	2	3	4	5

SHORT Flow State Scale (S FSS)

Please answer the following questions in relation to your experience in the event or activity you have just completed. These questions relate to the thoughts and feelings you may have experienced while taking part. There are no right or wrong answers. Think about how you felt during the event/activity, then answer the questions using the rating scale below. For each question, circle the number that best matches your experience.

During the event of *(name event)*:_____

		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	I felt I was competent enough to meet the demands of the situation	1	2	3	4	5
2	I did things spontaneously and automatically without having to think	1	2	3	4	5
3	I had a strong sense of what I wanted to do	1	2	3	4	5
4	I had a good idea about how well I was doing while I was involved in the task/activity	1	2	3	4	5
5	I was completely focused on the task at hand	1	2	3	4	5
6	I had a feeling of total control over what I was doing	1	2	3	4	5
7	I was not worried about what others may have been thinking of me	1	2	3	4	5
8	The way time passed seemed to be different from normal	1	2	3	4	5
9	I found the experience extremely rewarding	1	2	3	4	5

CORE Dispositional Flow Scale (C DFS)

These questions relate to the thoughts and feelings you may experience during participation in your main activity. You may experience these characteristics some of the time, all of the time, or none of the time. There are no right or wrong answers. Think about how often you experience each characteristic during your activity and circle the number that best matches your experience.

In general, when I take part in *(name your main activity)*:_____

		Never	Rarely	Sometimes	Frequently	Always
1	I am *'totally involved'*	1	2	3	4	5
2	It feels like *'everything clicks'*	1	2	3	4	5
3	I am *'tuned in'* to what I am doing	1	2	3	4	5
4	I am *'in the zone'*	1	2	3	4	5
5	I feel *'in control'*	1	2	3	4	5
6	I am *'switched on'*	1	2	3	4	5
7	It feels like I am *'in the flow'* of things	1	2	3	4	5
8	It feels like *'nothing else matters'*	1	2	3	4	5
9	I am *'in the groove'*	1	2	3	4	5
10	I am *'totally focused'* on what I am doing	1	2	3	4	5

CORE Flow State Scale (C FSS)

Please answer the following questions in relation to your experience in the event or activity you have just completed. These questions relate to the thoughts and feelings you may have experienced while taking part. There are no right or wrong answers. Think about how you felt during the event/activity, then answer the questions using the rating scale below. For each question, circle the number that best matches your experience.

During the event of *(name event)*:_____

		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	I was *'totally involved'*	1	2	3	4	5
2	It felt like *'everything clicked''*	1	2	3	4	5
3	I was *'tuned in'* to what I was doing	1	2	3	4	5
4	I was *'in the zone'*	1	2	3	4	5
5	I felt *'in control'*	1	2	3	4	5
6	I was *'switched on'*	1	2	3	4	5
7	It felt like I was *'in the flow'* of things	1	2	3	4	5
8	It felt like *'nothing else mattered''*	1	2	3	4	5
9	I was *'in the groove'*	1	2	3	4	5
10	I was *'totally focused'* on what I was doing	1	2	3	4	5

Appendix I: Scoring LONG Flow (Dispositional)

LONG Dispositional Flow Scale-2 (DFS-2) - Physical

LONG Dispositional Flow Scale-2 (DFS-2) - General

The ***LONG Dispositional Flow Scales (DFS-2)*** are designed to be used as a dispositional flow assessment, with responses indicating the frequency with which flow is experienced in the target activity in general. Therefore, responses should be given at a time that is not directly associated with taking part in the activity being assessed.

The title on the questionnaire is "LONG Dispositional Flow Scale (DFS-2) (Physical or General)". Respondents should be directed to answer the scale in relation to their experience in their chosen activity in general. Instructions for respondents are provided on the first page of the questionnaire.

Scoring of DFS-2 Dimensions

The table below can be used to score the DFS-2. As shown in the Table, there are four items for each of nine flow dimensions (A) represented in this scale. The item numbers for each dimension are given below (B). Total the item scores for each dimension (C), and then divide by four, to obtain flow dimension item-average scores (D). If there are non-responses, average for the number of responses available. A total scale score can also be obtained by summing the item-average dimension scores. It is recommended that dimension scores be used where possible, as more detailed information about flow is available via the dimension profile.

A DFS-2 Dimensions	B Items	C Dimension Total	D Item- Average Scores
1. Challenge-Skill Balance	Q1+Q10+Q19+Q28		
2. Merging of Action and Awareness	Q2+Q11+Q20+Q29		
3. Clear Goals	Q3+Q12+Q21+Q30		
4. Unambiguous Feedback	Q4+Q13+Q22+Q31		
5. Concentration on the Task at Hand	Q5+Q14+Q23+Q32		
6. Sense of Control	Q6+Q15+Q24+Q33		
7. Loss of Self-Consciousness	Q7+Q16+Q25+Q34		
8. Transformation of Time	Q8+Q17+Q26+Q35		
9. Autotelic Experience	Q9+Q18+Q27+Q36		
Total Scale Score (sum column D)			

Appendix J: Scoring LONG Flow (State)

LONG Flow State Scale-2 (FSS-2) - Physical

LONG Flow State Scale-2 (FSS-2) - General

The ***LONG Flow State Scales (FSS-2)*** are designed to be used as a post-event flow assessment. Therefore, responses should be given as soon as possible after performance in the activity being assessed.

The title on the questionnaire is "LONG State Flow Scale (FSS-2) (Physical or General)". Respondents should be directed to answer the scale in relation to their experience in the activity they have just completed. Instructions for respondents are provided on the first page of the questionnaire.

Scoring of FSS-2 Dimensions
The table below can be used to score the FSS-2. As shown in the Table, there are four items for each of nine flow dimensions (A) represented in this scale. The item numbers for each dimension are given below (B). Total the item scores for each dimension (C), and then divide by four, to obtain flow dimension item-average scores (D). If there are non-responses, average for the number of responses available. A total scale score can also be obtained by summing the item-average dimension scores. It is recommended that dimension scores be used where possible, as more detailed information about flow is available via the dimension profile.

A FSS-2 Dimensions	B Items	C Dimension Total	D Item- Average Scores
1. Challenge-Skill Balance	Q1+Q10+Q19+Q28		
2. Merging of Action and Awareness	Q2+Q11+Q20+Q29		
3. Clear Goals	Q3+Q12+Q21+Q30		
4. Unambiguous Feedback	Q4+Q13+Q22+Q31		
5. Concentration on the Task at Hand	Q5+Q14+Q23+Q32		
6. Sense of Control	Q6+Q15+Q24+Q33		
7. Loss of Self-Consciousness	Q7+Q16+Q25+Q34		
8. Transformation of Time	Q8+Q17+Q26+Q35		
9. Autotelic Experience	Q9+Q18+Q27+Q36		
Total Scale Score (sum column D)			

Appendix K: Scoring SHORT Flow (Dispositional)

SHORT Dispositional Flow Scale (S DFS)

The ***SHORT Dispositional Flow Scale (S DFS)*** is designed to be used as a dispositional flow assessment, with responses indicating the frequency with which flow is experienced in the target activity in general. Therefore, responses should be given at a time that is not directly associated with taking part in the activity being assessed.

The title on the questionnaire is "***SHORT Dispositional Flow Scale (S DFS)***". Respondents should be directed to answer the scale in relation to their experience in their chosen activity in general. Instructions for respondents are provided on the first page of the questionnaire.

Scoring of SHORT DFS Scale

There is one item for each of nine flow dimensions represented in this scale. The item number for each dimension is given below. The item scores can be used to represent each flow dimension—although the LONG Flow Scales are much better suited to providing dimension profiles than the SHORT scales. The generally recommended procedure for scoring the short DFS is to sum the 9 items together, and then divide by 9 to obtain a SHORT Flow score. If an item score is missing, take the average of the items with responses.

S DFS DIMENSIONS	ITEMS	SCORE
1. Challenge-Skill Balance	Q1	
2. Merging of Action and Awareness	Q2	
3. Clear Goals	Q3	
4. Unambiguous Feedback	Q4	
5. Concentration on the Task at Hand	Q5	
6. Sense of Control	Q6	
7. Loss of Self-Consciousness	Q7	
8. Transformation of Time	Q8	
9. Autotelic Experience	Q9	
	Total :	
Divide Total by 9 to obtain SHORT FLOW SCORE:	SCORE:	

Appendix L: Scoring SHORT Flow (State)

SHORT Flow State Scale (S FSS)

The ***SHORT Flow State Scale (S FSS)*** is designed to be used as a post-event flow assessment. Therefore, responses should be given as soon as possible after performance in the activity being assessed.

The title on the questionnaire is "***SHORT Flow State Scale (S FSS)***". Respondents should be directed to answer the scale in relation to their experience in the activity they have just completed. Instructions for respondents are provided on the first page of the questionnaire.

Scoring of SHORT FSS Scale

There is one item for each of nine flow dimensions represented in this scale. The item number for each dimension is given below. The item scores can be used to represent each flow dimension—although the LONG Flow Scales are much better suited to providing dimension profiles than the SHORT scales. The generally recommended procedure for scoring the short FSS is to sum the 9 items together, and then divide by 9 to obtain a SHORT Flow score. If an item score is missing, take the average of the items with responses.

S FSS DIMENSIONS	ITEMS	SCORE
1. Challenge-Skill Balance	Q1	
2. Merging of Action and Awareness	Q2	
3. Clear Goals	Q3	
4. Unambiguous Feedback	Q4	
5. Concentration on the Task at Hand	Q5	
6. Sense of Control	Q6	
7. Loss of Self-Consciousness	Q7	
8. Transformation of Time	Q8	
9. Autotelic Experience	Q9	
	Total :	
Divide Total by 9 to obtain SHORT FLOW SCORE:	SCORE:	

Appendix M: Scoring CORE Flow (Dispositional & State)

CORE Dispositional Flow Scale (C DFS)

The ***CORE Dispositional Flow Scale (C DFS)*** is designed to be used as a dispositional flow assessment, with responses indicating the frequency with which flow is experienced in the target activity in general. Therefore, responses should be given at a time that is not directly associated with taking part in the activity being assessed. Use this version when you want to assess the tendency to experience flow in a (target) activity.

The title on the questionnaire is "***CORE Dispositional Flow Scale (C DFS)***". Respondents should be directed to answer the scale in relation to their experience in their chosen activity in general. Instructions for respondents are provided on the first page of the questionnaire. If an item score is missing, take the average of the items with responses.

Scoring of CORE DISPOSITIONAL FLOW

Simply sum the 10 items together, and then divide by 10, to obtain a CORE Flow score.

Sum of 10 items = ____; divide by 10 to give CORE Flow Score: ____

CORE Flow State Scale (C FSS)

The ***CORE Flow State Scale (C FSS)*** is designed to be used as a post-event flow assessment. Therefore, responses should be given as soon as possible after performance in the activity being assessed. Use this version when you want to assess flow in a specific activity or event.

The title on the questionnaire is "***CORE Flow State Scale (C FSS)***". Respondents should be directed to answer the scale in relation to their experience in the activity they have just completed. Instructions for respondents are provided on the first page of the questionnaire. If an item score is missing, take the average of the items with responses.

Scoring of CORE STATE FLOW

Simply sum the 10 items together, and then divide by 10, to obtain a CORE Flow score.

Sum of 10 items = ____; divide by 10 to give CORE Flow Score: ____