# The Exercise Motivations Inventory

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## The Original EMI

A common theme emerging from a variety of theoretical approaches to the problem of exercise adherence concerns the role of individuals' reasons for exercising (participation motives) in determining long-term adherence to regular physical activity. The EMI (Markland and Hardy, 1993) was developed as a means of assessing participation motives in order to examine such issues as the influence of motives on exercise participation, how such motives might influence the choice of activities undertaken, how affective responses to exercising may be influenced by reasons for exercising and how involvement in physical activity might have a reciprocal influence on participation motives. In particular, the authors developed the instrument to examine questions concerning the functional significance of exercise motives from the perspective of Deci and Ryan's (1985) self-determination theory.

The development and initial assessment of the reliability and validity of the EMI are described in Markland & Hardy (1993). The EMI subscales have been found to discriminate between women taking part in community aerobics classes and members of a Weight-Watchers group taking part in aerobics as part of the weight reduction programme (Markland, Ingledew, Hardy and Grant, 1992). In an interesting study by Ingledew, Hardy and de Sousa (1995) EMI weight management scores were differentially predicted amongst males and females by body mass index and body shape dissatisfaction. Markland (1999), in a test of the self-determination theory prediction that motives could be experienced as internally controlling or internally informational, found that exercise motives as measured by the EMI differentially predicted perceptions of autonomy and exercise interest-enjoyment.

## The EMI-2

Whilst the original EMI appeared to be an adequate means of assessing individual's participation motives, we remained concerned about weaknesses with the fitness and health-related subscales. Specifically, the EMI did not assess some obvious fitness-related reasons for exercising (e.g. strength, endurance, etc.) and the health-related subscales focused on the avoidance of ill-health, neglecting potential positively-oriented health-related motives. In addition, the wording of the instructional set made the EMI only applicable to individuals who currently exercise. A number of users or potential users of the EMI had pointed out that it would be useful to assess the reasons that non-exercisers might have for taking up exercise. A second version of the EMI (EMI-2) was developed to address these problems and to improve some of the other subscales. Further items were generated and the instructions and item stem were modified to make the EMI-2 applicable to both exercisers and non-exercisers. The new version comprises fourteen subscales. The factorial validity and invariance of the factor structure across gender were rigorously tested using confirmatory factor analytic procedures (Markland and Ingledew, 1997). More recently I tested the invariance of the factor structure across exercisers and non-exercisers and found that it holds up well for both populations (unpublished). The EMI-2 has been found to discriminate between individuals at different stages in the stage of change for exercise and to predict change in stage across a three month period in ways that are consistent with self-determination theory (Ingledew, Markland and Medley, 1998).

Using the EMI-2

The EMI-2 has attracted considerable attention from researchers around the world. To the author's knowledge it has been translated into at least Spanish, German, Hungarian and Turkish (see other language versions). Researchers are welcome to use the EMI-2. The instrument and scoring key can be found on pages 3-7.

Dr. Sudesh Kannan has created an Excel spreadsheet for scoring the EMI-2. You can download it at http://www.FitnessLogistics.com/articles/ExerciseMotivations.html. Simply enter the item scores in the column labeled C and the subscale scores will be calculated automatically and displayed at the bottom of the spreadsheet.

Some EMI and EMI-2 references

Ingledew, D.K., Hardy, L. and de Sousa, K. (1995). Body shape dissatisfaction and exercise motivations. *Journal of Sports Sciences*, **13**, 60.

Ingledew, D.K.I., Markland, D. and Medley, A. (1998). Exercise motives and Stages of Change. *Journal of Health Psychology*, **3**, 477-489.

Ingledew, D.K. & Sullivan, G. (2002). Effects of body mass and body image on exercise motives in adolescence. *Psychology of Exercise and Sport*, **3**, 323-338.

Markland, D. (1999). Internally informational versus internally controlling exercise motives and exercise enjoyment: The mediating role of self-determination. In P. Parisi, F. Pigozzi, & G. Prinzi (Eds.) *Sport Science '99 in Europe. Proceedings of the 4th Annual Congress of the European College of Sport Science*. Rome: University Institute of Motor Sciences.

Markland, D. and Hardy, L. (1993). The Exercise Motivations Inventory: Preliminary development and validity of a measure of individuals' reasons for participation in regular physical exercise. *Personality & Individual Differences*, **15**, 289-296.

Markland, D. & Ingledew, D.K. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivations Inventory. *British Journal of Health Psychology*, **2**, 361-376.

Markland, D., Ingledew, D.K., Hardy, L. and Grant, L. (1992). A comparison of the exercise motivations of aerobics participants and weight-watcher exercisers. *Journal of Sports Sciences*, **10**, 609-610.

# The Exercise Motivations Inventory – 2 (EMI-2)

## By David Markland, Ph.D.

On the following pages are a number of statements concerning the reasons people often give when asked why they exercise. *Whether you currently exercise regularly or not,* please read each statement carefully and indicate, by circling the appropriate number, whether or not each statement *is true* for you personally, *or would be true* for you personally if you did exercise. If you do not consider a statement to be true for you at all, circle the '0'. If you think that a statement is very true for you indeed, circle the '5'. If you think that a statement is partly true for you, then circle the '1', '2', '3' or '4', according to how strongly you feel that it reflects why you exercise or might exercise.

Remember, we want to know why *you personally* choose to exercise or might choose to exercise, not whether you think the statements are good reasons for *anybody* to exercise.

It helps us to have basic personal information about those who complete this questionnaire. We would be grateful for the following information:

Your age  ………… years          Your gender ……     male/female

|  | | Not at all true for me | | | | | Very true for me |
|---|---|---|---|---|---|---|---|

**Personally, I exercise (or might exercise) …**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | To stay slim | 0 | 1 | 2 | 3 | 4 | 5 |
| 2 | To avoid ill-health | 0 | 1 | 2 | 3 | 4 | 5 |
| 3 | Because it makes me feel good | 0 | 1 | 2 | 3 | 4 | 5 |
| 4 | To help me look younger | 0 | 1 | 2 | 3 | 4 | 5 |
| 5 | To show my worth to others | 0 | 1 | 2 | 3 | 4 | 5 |
| 6 | To give me space to think | 0 | 1 | 2 | 3 | 4 | 5 |

|  |  | **Not at all true for me** |  |  |  |  | **Very true for me** |
|---|---|---|---|---|---|---|---|
| **Personally, I exercise (or might exercise) …** | | | | | | | |
| 7 | To have a healthy body | 0 | 1 | 2 | 3 | 4 | 5 |
| 8 | To build up my strength | 0 | 1 | 2 | 3 | 4 | 5 |
| 9 | Because I enjoy the feeling of exerting myself | 0 | 1 | 2 | 3 | 4 | 5 |
| 10 | To spend time with friends | 0 | 1 | 2 | 3 | 4 | 5 |
| 11 | Because my doctor advised me to exercise | 0 | 1 | 2 | 3 | 4 | 5 |
| 12 | Because I like trying to win in physical activities | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | To stay/become more agile | 0 | 1 | 2 | 3 | 4 | 5 |
| 14 | To give me goals to work towards | 0 | 1 | 2 | 3 | 4 | 5 |
| 15 | To lose weight | 0 | 1 | 2 | 3 | 4 | 5 |
| 16 | To prevent health problems | 0 | 1 | 2 | 3 | 4 | 5 |
| 17 | Because I find exercise invigorating | 0 | 1 | 2 | 3 | 4 | 5 |
| 18 | To have a good body | 0 | 1 | 2 | 3 | 4 | 5 |
| 19 | To compare my abilities with other peoples' | 0 | 1 | 2 | 3 | 4 | 5 |
| 20 | Because it helps to reduce tension | 0 | 1 | 2 | 3 | 4 | 5 |
| 21 | Because I want to maintain good health | 0 | 1 | 2 | 3 | 4 | 5 |
| 22 | To increase my endurance | 0 | 1 | 2 | 3 | 4 | 5 |
| 23 | Because I find exercising satisfying in and of itself | 0 | 1 | 2 | 3 | 4 | 5 |

| | | Not at all true for me | | | | | Very true for me |
|---|---|---|---|---|---|---|---|

**Personally, I exercise (or might exercise) …**

| 24 | To enjoy the social aspects of exercising | 0 | 1 | 2 | 3 | 4 | 5 |
| 25 | To help prevent an illness that runs in my family | 0 | 1 | 2 | 3 | 4 | 5 |
| 26 | Because I enjoy competing | 0 | 1 | 2 | 3 | 4 | 5 |
| 27 | To maintain flexibility | 0 | 1 | 2 | 3 | 4 | 5 |
| 28 | To give me personal challenges to face | 0 | 1 | 2 | 3 | 4 | 5 |
| 29 | To help control my weight | 0 | 1 | 2 | 3 | 4 | 5 |
| 30 | To avoid heart disease | 0 | 1 | 2 | 3 | 4 | 5 |
| 31 | To recharge my batteries | 0 | 1 | 2 | 3 | 4 | 5 |
| 32 | To improve my appearance | 0 | 1 | 2 | 3 | 4 | 5 |
| 33 | To gain recognition for my accomplishments | 0 | 1 | 2 | 3 | 4 | 5 |
| 34 | To help manage stress | 0 | 1 | 2 | 3 | 4 | 5 |
| 35 | To feel more healthy | 0 | 1 | 2 | 3 | 4 | 5 |
| 36 | To get stronger | 0 | 1 | 2 | 3 | 4 | 5 |
| 37 | For enjoyment of the experience of exercising | 0 | 1 | 2 | 3 | 4 | 5 |
| 38 | To have fun being active with other people | 0 | 1 | 2 | 3 | 4 | 5 |

| | | Not at all true for me | | | | Very true for me |
|---|---|---|---|---|---|---|

**Personally, I exercise (or might exercise) …**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 39 | To help recover from an illness/injury | 0 | 1 | 2 | 3 | 4 | 5 |
| 40 | Because I enjoy physical competition | 0 | 1 | 2 | 3 | 4 | 5 |
| 41 | To stay/become flexible | 0 | 1 | 2 | 3 | 4 | 5 |
| 42 | To develop personal skills | 0 | 1 | 2 | 3 | 4 | 5 |
| 43 | Because exercise helps me to burn calories | 0 | 1 | 2 | 3 | 4 | 5 |
| 44 | To look more attractive | 0 | 1 | 2 | 3 | 4 | 5 |
| 45 | To accomplish things that others are incapable of | 0 | 1 | 2 | 3 | 4 | 5 |
| 46 | To release tension | 0 | 1 | 2 | 3 | 4 | 5 |
| 47 | To develop my muscles | 0 | 1 | 2 | 3 | 4 | 5 |
| 48 | Because I feel at my best when exercising | 0 | 1 | 2 | 3 | 4 | 5 |
| 49 | To make new friends | 0 | 1 | 2 | 3 | 4 | 5 |
| 50 | Because I find physical activities fun, especially when competition is involved | 0 | 1 | 2 | 3 | 4 | 5 |
| 51 | To measure myself against personal standards | 0 | 1 | 2 | 3 | 4 | 5 |

Thank you for completing this questionnaire

The Exercise Motivations Inventory

## EMI-2 Scoring Key

**Scale scores are obtained by calculating means of the appropriate items**

| Scale | Items | | | |
|---|---|---|---|---|
| **Stress Management** | 6 | 20 | 34 | 46 |
| **Revitalisation** | 3 | 17 | 31 | |
| **Enjoyment** | 9 | 23 | 37 | 48 |
| **Challenge** | 14 | 28 | 42 | 51 |
| | | | | |
| **Social Recognition** | 5 | 19 | 33 | 45 |
| **Affiliation** | 10 | 24 | 38 | 49 |
| **Competition** | 12 | 26 | 40 | 50 |
| | | | | |
| **Health Pressures** | 11 | 25 | 39 | |
| **Ill-Health Avoidance** | 2 | 16 | 30 | |
| **Positive Health** | 7 | 21 | 35 | |
| | | | | |
| **Weight Management** | 1 | 15 | 29 | 43 |
| **Appearance** | 4 | 18 | 32 | 44 |
| | | | | |
| **Strength & Endurance** | 8 | 22 | 36 | 47 |
| **Nimbleness** | 13 | 27 | 41 | |

# The Exercise Causality Orientations Scale

## Causality Orientations Theory

Deci and Ryan's (1985a, 1985b) causality orientations theory is concerned with individual differences in the extent to which people seek to be autonomous or controlled or in the regulation of their behaviour. According to this theory, there are three causality orientations: an *autonomy orientation*, a *control orientation* and an *impersonal orientation*. When autonomy oriented, individuals seek out opportunities to be self-determining, regard the characteristics of events as sources of information to regulate their chosen behaviours, and regulate their actions on the basis of personal goals and interests. When control oriented, individuals rely on externally or internally imposed controlling events, such as extrinsic rewards and deadlines to regulate their behaviour. The impersonal orientation is characterised by a belief that behavioral outcomes are beyond one's control When impersonally oriented, individuals feel that they are unable to regulate their behaviour to achieve desired outcomes, leading to a sense of incompetence and helplessness.

Deci and Ryan (1985b) developed the General Causality Orientations Scale (GCOS) to assess the strength of each of these orientations. The GCOS was designed as a global measure to indicate enduring general motivational orientations across various different aspects of life. The instrument has an unusual format in that individuals are presented with a series of scenarios addressing different life circumstances such as situations involving interpersonal relationships or the work environment. Each scenario is followed by a set of three responses corresponding to each of the three causality orientations. Respondents are asked to indicate the extent to which each response is characteristic of him or her, providing a score for each orientation.

## The Exercise Causality Orientations Scale

Deci and Ryan recognised that although individuals may have a general tendency to be autonomy, control or impersonally oriented across most life domains, the strength of their orientations could also differ in different life contexts. Thus context-specific scales may allow better prediction of behaviours within specific domains. With this in mind, we (Rose, Markland & Parfitt, 2001) developed the Exercise Causality Orientations Scale (ECOS) to assess the strength of individuals' causality orientations in the exercise domain.

The ECOS takes the same format as the GCOS, presenting a series of scenarios that reflect the exercising environment, each followed by three responses characteristic of each causality orientation.

## Development and psychometric properties of the ECOS

Full details can be found in Rose, Markland and Parfitt (2000). Following initial consensus validation work on the scenarios and responses, and a pilot study, a preliminary version of the ECOS comprising nine scenarios was completed by 592 adult respondents. The factorial validity of the scale was assessed using a multi-trait, multi-method approach. Specifically, a correlated-trait, correlated uniquenesses model was assessed using confirmatory factor analysis in LISREL 8.30 (see a diagram of the model on next page).

Starting with a nine scenario model, scenarios were successively removed based on evidence of factorial ambiguity among the items to achieve the best-fitting model whilst maintaining optimum breadth of content. A seven-scenario model was eventually accepted. The fit of this model was: Satorra-Bentler scaled chi sq = 387; minimum fit function chi square = 445; df = 165; CFI = .96; SRMR = .06; RMSEA = .05 (90% confidence interval. = .04 : 06).

## Correlated-trait, Correlated Uniquenesses Model



The Exercise Motivations Inventory
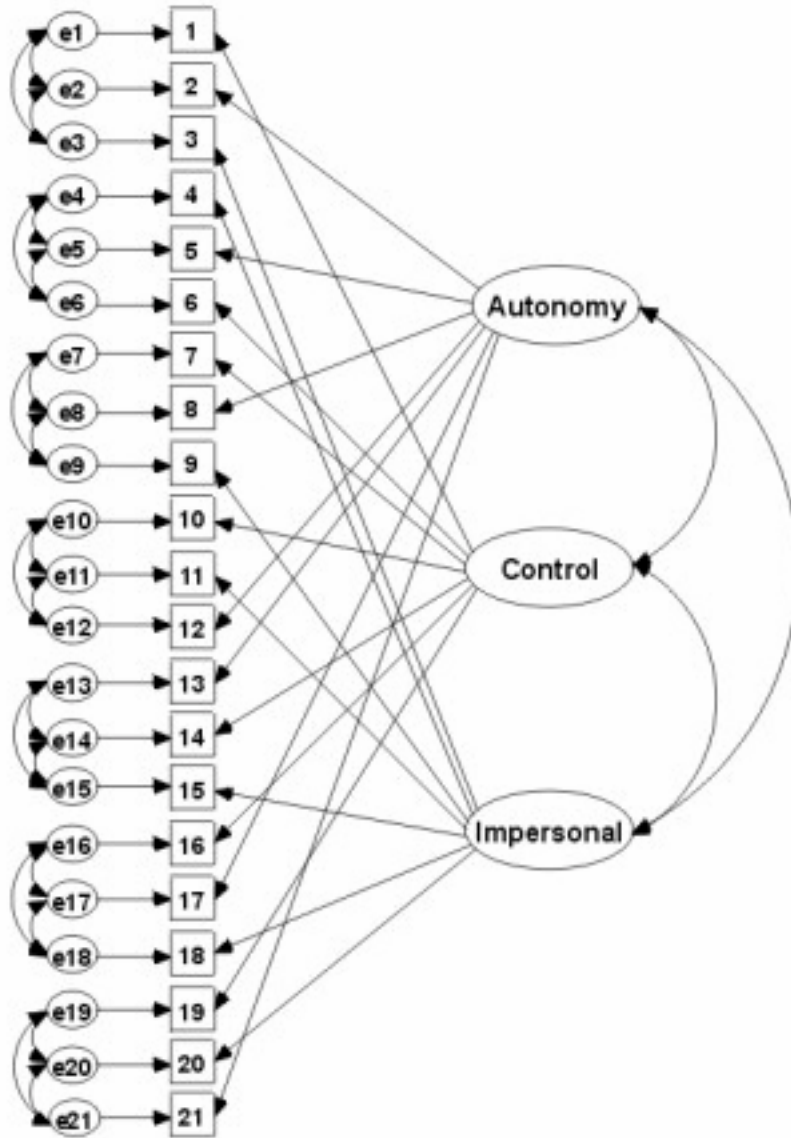
The intercorrelations among the orientations were as follows:

|  | **Autonomy** | **Control** | **Impersonal** |
|---|---|---|---|
| **Autonomy** | 1.00 | | |
| **Control** | .01 | 1.00 | |
| **Impersonal** | -.53 | .55 | 1.00 |

## Scoring the ECOS

Causality orientations theory adopts a multidimensional view of personality. Thus individuals are not categorised according to types (e.g autonomy oriented versus control oriented). Instead individuals can be profiled according to the strength of each orientation that they exhibit. Thus scores are derived for each orientation. The strength of each orientation is calculated by summing scores on each orientation item response as follows:

| Scenario | Autonomy | Control | Impersonal |
|---|---|---|---|
| 1 | Item 2 | Item 1 | Item 3 |
| 2 | Item 2 | Item 3 | Item 1 |
| 3 | Item 2 | Item 1 | Item 3 |
| 4 | Item 3 | Item 1 | Item 2 |
| 5 | Item 1 | Item 2 | Item 3 |
| 6 | Item 2 | Item 1 | Item 3 |
| 7 | Item 3 | Item 1 | Item 2 |

Although Deci and Ryan (1985b) have argued against employing a typological approach to causality orientations, Koestner and Zuckerman (1994) have argued that it may be appropriate to classify individuals according to their predominant orientation. They suggested that this can be achieved by standardising scores on the the three orientations and then classifying individuals according to the orientation showing the highest z-score. Researchers might find this method more appropriate than the dimensional approach in some circumstances.

## References

Deci, E.L. & Ryan, R.M. (1985a). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York, Plenum.

Deci, E.L. & Ryan, R.M. (1985b). The General Causality Orientations Scale: Self-determination in personality. *Journal of Research in Personality*, **19**, 109-134.

Rose, E.A., Markland, D., & Parfitt, G. (2001). The development and initial validation of the Exercise Causality Orientations Scale. *Journal of Sports Sciences*, **19**, 445-462.

Koestner, R. & Zuckerman, M. (1994). Causality orientations, failure and achievement. Journal of Personality, 62, 321-346.

# The Exercise Causality Orientations Scale (ECOS)

## By David Markland, Ph.D., Elaine Rose, Ph.D. & Gaynor Parfitt, Ph.D.

Below are a series of situations that people can find themselves in with regard to exercising. Each situation is followed by three responses (a, b and c) that represent different ways in which people could react. Please imagine yourself in each situation and circle a number on the scale below EACH response (a, b AND c) to indicate the extent to which EACH response would be characteristic of you in that situation. There are no right or wrong answers and no trick questions. We simply want to know the extent to which you think you would react in these different ways to each situation.

1.  **You are beginning a new exercise programme. You are likely to:**

    a)  Attend a structured exercise class where an exercise leader is telling you what to do.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    b)  Decide for yourself which type of exercise you would like to complete.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    c)  Tag along with your friends and do what they do.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

2.  **You are asked to keep a record of all the weekly exercise you have completed in an exercise diary. You are likely to view the diary:**

    a)  As a reminder of how incapable you are at fulfilling the task.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    b)  As a way to measure your progress and to feel proud of your achievements.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    c)  As a way of pressurising yourself to exercise.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

3.  **In order to monitor how well you are doing in an exercise programme you are likely to want to:**

    a)  Be given a lot of praise and encouragement from others.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    b)  Evaluate your own performance and provide yourself with positive feedback.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    c)  Just hope that what you are doing is correct.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

4.  **You have been exercising regularly for 6 months but recently you have been missing sessions and are finding it hard to get motivated to exercise. You are likely to:**

    a)  Approach someone to help motivate you.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    b)  Ignore the problem, nothing can be done to improve your motivation.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

    c)  Employ your own strategies to motivate yourself.

    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
    |---|---|---|---|---|---|---|
    | Very unlikely | | | Moderately likely | | | Very likely |

**5.  You have been told that setting goals is a good way to motivate yourself to exercise. You would likely:**

a)  Set your own realistic but challenging goals.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

b)  Make someone important to you set goals for you to aim for.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

c)  Not set goals because you may not be able to live up to them.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

**6.  During a discussion with an exercise counsellor he/she presents many options on the best way for you to exercise to achieve fitness and health benefits. It is likely that your first thought would be:**

a)  What do you (the exercise leader) think I should do?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

b)  What do I think is the best option for me?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

c)  What has everyone else done in the past?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

**7.** **During an exercise session how hard you are working out is likely to be governed by:**

a) The intensity you have been told to exercise at.

|  1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

b) What everyone around you is doing.

|  1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

c) How you are feeling whilst exercising at the intensity you choose.

|  1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very unlikely | | | Moderately likely | | | Very likely |

Thank you very much for completing this questionnaire

# The Locus of Causality for Exercise Scale

The Locus of Causality for Exercise Scale (LCE) is a brief, three-item scale designed to sit comfortably with the Intrinsic Motivation Inventory items and to assess the extent to which individuals feel that they choose to exercise rather than feeling that they have to for some reason. In hindsight, it might have been better to label the scale *The Self-determination for Exercise Scale*, but as it was published as the LCE, the name has to stick. According to Deci and Ryan (1985), a central feature of self-determination is the perception of choice whereas the perceived locus of causality construct is concerned with the perceived source of the initiation of behaviour. When an individual feels that their behaviour is controlled by some event, such as being told that they must comply, they are said to have an external perceived locus of causality. An internal perceived locus of causality is evident when an individual feels that they are engaging in a behaviour freely and with no sense of coercion. Thus, although the self-determination and perceived locus of causality constructs are not entirely synonymous, individuals will feel more self-determined when the perceived locus of causality is internal and less self-determined when it is external.

## Psychometric properties

The LCE was initially developed using both exploratory and confirmatory factor analyses. In the initial study, the fit of the model was excellent (Chi square = 1.64; df = 2; $p$ = .44; CFI = 1.00; RMSEA = .00). However, with only two degrees of freedom, a good fit is hardly anything to get excited about! Markland and Hardy (1997) reported alpha reliability coefficients in two studies using the scale of .83 and .82 and found it to be a strong predictor of intrinsic motivation. Markland (1999) found that self-determination, as measured using the LCE, moderated the effects of perceived competence on intrinsic motivation.

## Scoring the LCE

Responses to the LCE are scored on a Likert-type scale ranging from 1 (strongly disagree) to 7(strongly agree). To score the LCE, reverse scores on items two and three and then calculate the mean for the three items. High scores indicate greater self-determination or a more internal perceived locus of causality and low scores less self-determination.

## References

Deci, E.L. & Ryan, R.M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York, Plenum.

Markland, D. (1999). Self-determination moderates the effects of perceived competence on intrinsic motivation in an exercise setting. *Journal of Sport & Exercise Psychology*, 21, 350-360.

Markland, D. & Hardy, L. (1997). On the factorial and construct validity of the Intrinsic Motivation Inventory: Conceptual and operational concerns. *Research Quarterly for Exercise and Sport*, 68, 20-32.

# Locus of Causality for Exercise Scale

## Items and Scoring

|   |   | Strongly Disagree | | | | | | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| 1 | I exercise because I like to rather than because I feel I have to | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | Exercising is not something I would necessarily choose to do, rather it is something that I feel I ought to do | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | Having to exercise is a bit of a bind but it has to be done | 1 | 2 | 3 | 4 | 5 | 6 | 7 |