

Transtheoretical Model Variables: Stage of Change, Processes of Change, Decisional Balance, Self-Efficacy, and Temptations Items.

Stage of Change for Physical Activity
Questionnaire Instrument

Regular Physical Activity: For physical activity to be regular it must be done for *30 minutes at a time* (or more) per day, and be done *at least 5 days* per week. For example, you could take three 10-minute brisk walks or ride a bicycle for 30 minutes. Physical activity includes such activities as walking briskly, biking, swimming, line dancing, and aerobics classes or any other activities where the exertion is similar to these activities. Your heart rate and/or breathing should increase, but there is no need to exhaust yourself.

Do you engage in regular physical activity according to the definition above? **Mark the one statement that applies to you.**

SCORING

_____ Yes, I have been doing physical activity regularly for more than 6 months.

Maintenance

_____ Yes, I have been doing physical activity regularly, but for less than 6 months.

Action

_____ No, but I intend to do regular physical activity in the next 30 days.

Preparation

_____ No, but I intend to do regular physical activity in the next 6 months.

Contemplation

_____ No, and I do not intend to do regular physical activity in the next 6 months.

Precontemplation

SOURCES

Lee, R. E., Nigg, C. R., DiClemente, C. C., & Courneya, K. S. (2001). Validating Motivational Readiness for Exercise Behavior With Adolescents. Research Quarterly of Exercise and Sports, *72*(4), 401-410.

Haas, S., & Nigg, C. R. (2009). Construct validation of the stages of change with strenuous, moderate, and mild physical activity and sedentary behaviour among children. Journal of Science and Medicine in Sport, *12*, 586-591.

Hellsten, L., Nigg, C., Norman, G., Burbank, P., Braun, L., Breger, R., Coday, M., Elliot, D., Garber, C., Greaney, M., Lees, F., Matthews, C., Moe, E., Resnick, B., Riebe, D., Rossi, J., Toobert, D., & Wang, T., (2008). Accumulation of Behavioral Validation Evidence for Physical Activity Stage of Change. Health Psychology. *27*(Suppl), S43-S53.

Nigg, C. R. (2002). Physical Activity Assessment Issues in Population Based Interventions: A Stage Approach, (pp. 227-239). G. J. Welk (Ed.), Physical Activity Assessments for Health-Related Research. Champaign, IL: Human Kinetics

Nigg, C. R. (2005). There is More to Stages of Exercise than Just Exercise. Exercise and Sport Science Reviews, 33, 32-35.

Schumann A., Estabrooks P. A., Nigg C. R., & Hill J. (2003). Validation of the Stages of Change with Mild, Moderate, and Strenuous Physical Activity Behavior, Intentions, and Self-efficacy. International Journal of Sports Medicine, 5, 363-365.

Schumann, A., Nigg, C. R., Rossi, J. S., Jordan, P. J., Norman, G. J., Garber, C. E., Riebe, D., & Benisovich, S.V. (2002). Construct validity of the stages of change of exercise adoption for different intensities of physical activity in four samples of differing age groups. American Journal of Health Promotion, 16(5), 280–287.

Stage of Change for Physical Activity
Interview Instrument

Regular Physical Activity: For physical activity to be regular it must be done for *30 minutes at a time* (or more) per day, and be done *at least 5 days* per week. For example, you could take three 10-minute brisk walks or ride a bicycle for 30 minutes. Physical activity includes such activities as walking briskly, biking, swimming, line dancing, and aerobics classes or any other activities where the exertion is similar to these activities. Your heart rate and/or breathing should increase, but there is no need to exhaust yourself.

Please answer all questions with either Yes or No.

According to the definition above:

- | | | |
|---|-----|----|
| 1. Do you currently engage in regular physical activity? | YES | NO |
| SKIP PATTERN: If YES go to #4, if NO go to #2 | | |
| 2. Do you intend to engage in regular physical activity in the next 6 months? | YES | NO |
| SKIP PATTERN: If YES go to #3, if NO finish | | |
| 3. Do you intend to engage in regular physical activity in the next 30 days? | YES | NO |
| SKIP PATTERN: If YES or NO finish | | |
| 4. Have you been regularly physically active for the past six months? | YES | NO |
| SKIP PATTERN: If YES or NO finish | | |

SCORING	
If item 1 = NO and item 2 = NO	Precontemplation
If item 1 = NO and item 2 = YES and item 3 = NO	Contemplation
If item 1 = NO and item 2 = YES and item 3 = YES	Preparation
If item 1 = YES and item 4 = NO	Action
If item 1 = YES and item 4 = YES	Maintenance

SOURCES

Lee, R. E., Nigg, C. R., DiClemente, C. C., & Courneya, K. S. (2001). Validating Motivational Readiness for Exercise Behavior With Adolescents. Research Quarterly of Exercise and Sports, *72*(4), 401-410.

Haas, S., & Nigg, C. R. (2009). Construct validation of the stages of change with strenuous, moderate, and mild physical activity and sedentary behaviour among children. Journal of Science and Medicine in Sport, *12*, 586-591.

Hellsten, L., Nigg, C., Norman, G., Burbank, P., Braun, L., Breger, R., Coday, M., Elliot, D., Garber, C., Greaney, M., Lees, F., Matthews, C., Moe, E., Resnick, B., Riebe, D., Rossi, J., Toobert, D., & Wang, T., (2008). Accumulation of Behavioral Validation Evidence for Physical Activity Stage of Change. Health Psychology. *27*(Suppl), S43-S53.

Nigg, C. R. (2002). Physical Activity Assessment Issues in Population Based Interventions: A Stage Approach, (pp. 227-239). G. J. Welk (Ed.), Physical Activity Assessments for Health-Related Research. Champaign, IL: Human Kinetics

Nigg, C. R. (2005). There is More to Stages of Exercise than Just Exercise. Exercise and Sport Science Reviews, 33, 32-35.

Schumann A., Estabrooks P. A., Nigg C. R., & Hill J. (2003). Validation of the Stages of Change with Mild, Moderate, and Strenuous Physical Activity Behavior, Intentions, and Self-efficacy. International Journal of Sports Medicine, 5, 363-365.

Schumann, A., Nigg, C. R., Rossi, J. S., Jordan, P. J., Norman, G. J., Garber, C. E., Riebe, D., & Benisovich, S.V. (2002). Construct validity of the stages of change of exercise adoption for different intensities of physical activity in four samples of differing age groups. American Journal of Health Promotion, 16(5), 280–287.

REVISED Processes of Change for Physical Activity: 5-Factor Measurement Model

Using the 5-point scale provided, please indicate how often **over the past month** you did the following

1	2	3	4	5
Never	Seldom	Occasionally	Often	Repeatedly

1. You read articles to learn more about exercise
2. You get upset when you saw people who would benefit from exercise but chose not to exercise
3. You realize that if you don't exercise regularly, you may get ill and be a burden to others
4. You feel more confident when you exercised regularly
5. You feel tired, and made yourself exercise anyway because you knew you would feel better afterwards
6. Did a friend encourage you to exercise when you didn't feel up to it
7. You think that one of the rewards of regular exercise is that it improves your mood
8. You tell yourself that you can keep exercising if you try hard enough
9. You look for information related to exercise
10. You think that by exercising regularly you will not be a burden to the healthcare system
11. You believe that regular exercise will make you a healthier, happier person
12. You exercise instead of taking a nap after work
13. You have someone around who encouraged you to exercise
14. You find out about new methods of exercising
15. You get upset when you realized that people you love would have better health if they exercised
16. You think that regular exercise plays a role in reducing health care costs
17. You feel better about yourself when you exercised
18. You take a walk or exercise, instead of relaxing by watching TV or eating
19. Your friends encourage you to exercise
20. You find that by engaging in regular exercise, you get the benefit of having more energy
21. You believe that you could exercise regularly

Questionnaire items

Factor 1: Self-Revaluation (4, 11, 17), Reinforcement Management (7, 20) & Self-Liberation (8, 21)

Factor 2: Dramatic Relief (2, 15) & Environmental Revaluation (3, 10, 16)

Factor 3: Counter Conditioning (5, 12, 18)

Factor 4: Helping Relationships (6, 13, 19)

Factor 5: Consciousness Raising (1, 9, 14)

SCORING

Calculate the mean of each Factor.

SOURCE

Paxton, R. J., Nigg, C. R., Motl, R. W., McGee, K. A., McCurdy, D. K., Horwath, C. C., & Dishman, R. K. (2008). Are Constructs of the Transtheoretical Model for Physical Activity

Measured Equivalently Between Sexes, Age Groups, and Ethnicities? Annals of Behavioral Medicine, 35, 308-318.

Geller, K. S., Nigg, C. R., Motl, R. W., Horwath, C. C., & Dishman, R. K. (2012). Transtheoretical Model Constructs for Physical Activity Behavior are Invariant across Time among Ethnically Diverse Adults in Hawai'i. Psychology of Sport & Exercise. 13, 606-613.

REVISED Processes of Change for Physical Activity: 2-factor, 2nd-Order Measurement Model

Using the 5-point scale provided, please indicate how often **over the past month** you did the following

1	2	3	4	5
Never	Seldom	Occasionally	Often	Repeatedly

1. You read articles to learn more about exercise
2. You get upset when you saw people who would benefit from exercise but chose not to exercise
3. You realize that if you don't exercise regularly, you may get ill and be a burden to others
4. You notice that many people know that exercise is good for them (social liberation)
5. You feel tired, and made yourself exercise anyway because you knew you would feel better afterwards
6. Did a friend encourage you to exercise when you didn't feel up to it
7. You think that one of the rewards of regular exercise is that it improves your mood
8. You tell yourself that you can keep exercising if you try hard enough
9. You keep a set of exercise clothes with you so you can exercise whenever you get the time
10. You look for information related to exercise
11. You exercise instead of taking a nap after work
12. You get upset when you realized that people you love would have better health if they exercised
13. You think that regular exercise plays a role in reducing health care costs
14. You notice that famous people often say that they exercise regularly
15. Your friends encourage you to exercise
16. You find that by engaging in regular exercise, you get the benefit of having more energy
17. You believe that you could exercise regularly
18. You always had a clean set of exercise clothes

Questionnaire items

Experiential Higher Order Factor	Behavioral Higher Order Factor
Factor 1: Conscious Raising (1, 10)	Factor 1: Counter Conditioning (5, 11)
Factor 2: Dramatic Relief (2, 12)	Factor 2: Helping Relationships (6, 15)
Factor 3: Environmental Reevaluation (3, 13)	Factor 3: & Reinforcement Management (7, 16), Self Liberation (8, 17)
Factor 4: Social Liberation (4, 14)	Factor 4: Stimulus Control (9, 18)

SCORING

Calculate the mean of each Factor.

SOURCE

Paxton, R. J., Nigg, C. R., Motl, R. W., McGee, K. A., McCurdy, D. K., Horwath, C. C., & Dishman, R. K. (2008). Are Constructs of the Transtheoretical Model for Physical Activity Measured Equivalently Between Sexes, Age Groups, and Ethnicities? Annals of Behavioral Medicine, 35, 308-318.

Geller, K. S., Nigg, C. R., Motl, R. W., Horwath, C. C., & Dishman, R. K. (2012). Transtheoretical Model Constructs for Physical Activity Behavior are Invariant across Time among Ethnically Diverse Adults in Hawai'i. Psychology of Sport & Exercise. 13, 606-613.

ORIGINAL Processes of Change for Physical Activity

The following experiences can affect the physical activity habits of some people. Think of similar experiences you may be currently having or have had **during the past month**. Then rate how frequently the event occurs by circling the appropriate number. Please answer using the following 5-point scale:

1 **2** **3** **4** **5**
Never **Seldom** **Occasionally** **Often** **Repeatedly**

- 1. I read articles to learn more about physical activity. 1 2 3 4 5
- 2. I get upset when I see people who would benefit from physical activity but choose not to do physical activity. 1 2 3 4 5
- 3. I realize that if I don't do physical activity regularly, I may get ill and be a burden to others. 1 2 3 4 5
- 4. I feel more confident when I do physical activity regularly. 1 2 3 4 5
- 5. I have noticed that many people know that physical activity is good for them. 1 2 3 4 5
- 6. When I feel tired, I make myself do physical activity anyway because I know I will feel better afterwards. 1 2 3 4 5
- 7. I have a friend who encourages me to do physical activity when I don't feel up to it. 1 2 3 4 5
- 8. One of the rewards of regular physical activity is that it improves my mood. 1 2 3 4 5
- 9. I tell myself that I can keep doing physically activity if I try hard enough. .. 1 2 3 4 5
- 10. I keep a set of physical activity clothes with me so I can do physical

- activity whenever I get the time. 1 2 3 4 5
11. I look for information related to physical activity. 1 2 3 4 5
12. I am afraid of the results to my health if I do not do physical activity. 1 2 3 4 5
13. I think that by doing regular physical activity I will not be a burden to the healthcare system. 1 2 3 4 5
14. I believe that regular physical activity will make me a healthier, happier person. 1 2 3 4 5
15. I am aware of more and more people who are making physical activity a part of their lives..... 1 2 3 4 5
16. Instead of taking a nap after work, I do physical activity. 1 2 3 4 5
17. I have someone who encourages me to do physical activity. 1 2 3 4 5
18. I try to think of physical activity as a time to clear my mind as well as a workout for my body. 1 2 3 4 5
19. I make commitments to do physical activity. 1 2 3 4 5
20. I use my calendar to schedule my physical activity time..... 1 2 3 4 5
21. I find out about new methods of being physically active. 1 2 3 4 5
22. I get upset when I realize that people I love would have better health if they were physically active. 1 2 3 4 5
23. I think that regular physical activity plays a role in reducing health care costs. 1 2 3 4 5
24. I feel better about myself when I do physical activity 1 2 3 4 5
25. I notice that famous people often say that they do physical activity regularly. 1 2 3 4 5
26. Instead of relaxing by watching TV or eating, I take a walk or am physically active. 1 2 3 4 5
27. My friends encourage me to do physical activity. 1 2 3 4 5
28. If I engage in regular physical activity, I find that I get the benefit of having more energy. 1 2 3 4 5

29. I believe that I can do physical activity regularly. 1 2 3 4 5
30. I make sure I always have a clean set of physical activity clothes. 1 2 3 4 5

SCORING

Calculate the mean of each scale.

- | | |
|--|--------------------------------------|
| Consciousness Raising – 1, 11, 21 | Counterconditioning – 6, 16, 26 |
| Dramatic Relief – 2, 12, 22 | Helping Relationships – 7, 17, 27 |
| Environmental Reevaluation – 3, 13, 23 | Reinforcement Management – 8, 18, 28 |
| Self Reevaluation – 4, 14, 24 | Self Liberation – 9, 19, 29 |
| Social Liberation – 5, 15, 25 | Stimulus Control – 10, 20, 30 |

SOURCES:

Adapted from: Nigg, C. R., & Riebe, D. (2002). The Transtheoretical Model: Research review of exercise behavior and older adults, (pp. 147-180). In P. Burbank & D. Riebe (Eds.), Promoting exercise and behavior change in older adults: interventions with the Transtheoretical Model. New York, NY: Springer Publishing Company.

Nigg, C. R., Norman G. J., Rossi, J. S. & Benisovich, S. V. (1999). Processes of physical activity behavior change: Redeveloping the scale. Annals of Behavioral Medicine, 21, S79.

Nigg, C. R., Riebe, D., Rossi, J. S., Stillwell, K. M., Garber, C. E., Burbank, P. M., & Clark. P. G. (2001). Do the transtheoretical model instruments for physical activity behavior apply to older adults? Medicine and Science in Sports and Physical activity, 33(5). S149.

REVISED Decisional Balance

Using the 5-point scale provided, how important are the following opinions in your decision to exercise or not to exercise?

	1	2	3	4	5
	Not important	Slightly important	Moderately important	Very important	Extremely important

1. I would have more energy for my family and friends if I exercised regularly

2. I would feel embarrassed if people saw me exercising

3. I would feel less stressed if I exercised regularly

4. Exercise prevents me from spending time with my friends

5. Exercising puts me in a better mood for the rest of the day

6. I feel uncomfortable or embarrassed in exercise clothes

7. I would feel more comfortable with my body if exercised regularly

8. There is too much I would have to learn to exercise

9. Regular exercise would help me have a more positive outlook on life

**Responses to con questionnaire items are inverted before calculating the total decisional balance scores*

Questionnaire items

Pros (1, 3, 5, 7, 9)	Cons (2, 4, 6, 8)
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SCORING

Mean scores for the following items are calculated:

PROS – 1, 3, 5, 7, 9 CONS – 2, 4, 6, 8

SOURCES

Paxton, R. J., Nigg, C. R., Motl, R. W., McGee, K. A., McCurdy, D. K., Horwath, C. C., & Dishman, R. K. (2008). Are Constructs of the Transtheoretical Model for Physical Activity Measured Equivalently Between Sexes, Age Groups, and Ethnicities? Annals of Behavioral Medicine, 35, 308-318.

Geller, K. S., Nigg, C. R., Motl, R. W., Horwath, C. C., & Dishman, R. K. (2012). Transtheoretical Model Constructs for Physical Activity Behavior are Invariant across Time among Ethnically Diverse Adults in Hawai'i. Psychology of Sport & Exercise. 13, 606-613.

ORIGINAL Decisional Balance Scale

This section looks at positive and negative aspects of physical activity. Read the following items and indicate how important each statement is with respect to your decision to do physical activity or not to do physical activity in your leisure time by filling in the appropriate circle. Please answer using the following 5-point scale:

1	2	3	4	5
Not at all important	Somewhat important	Moderately important	Very important	Extremely important

1. I would have more energy for my family and friends if I do physical activity regularly. 1 2 3 4 5
2. I would feel embarrassed if people saw me being physically active. 1 2 3 4 5
3. I would feel less stressed if I do physical activity regularly. 1 2 3 4 5
4. Physical activity prevents me from spending time with my friends 1 2 3 4 5
5. Doing physical activity puts me in a better mood for the rest of the day. 1 2 3 4 5
6. I feel uncomfortable or embarrassed in physical activity clothes 1 2 3 4 5
7. I would feel more comfortable with my body if I did physical activity regularly. 1 2 3 4 5
8. There is too much I would have to learn to do physical activity 1 2 3 4 5
9. Regular physical activity would help me have a more positive outlook on life. 1 2 3 4 5
10. Physical activity puts an extra burden on my significant other 1 2 3 4 5

SCORING

Mean scores for the following items are calculated:

PROS – 1, 3, 5, 7, 9 CONS – 2, 4, 6, 8, 10

SOURCES

Adapted from: Nigg, C. R., & Riebe, D. (2002). The Transtheoretical Model: Research review of exercise behavior and older adults, (pp. 147-180). In P. Burbank & D. Riebe (Eds.), Promoting exercise and behavior change in older adults: interventions with the Transtheoretical Model. New York, NY: Springer Publishing Company.

Nigg, C. R., Rossi, J. S., Norman, G. J. & Benisovich, S. V. (1998). Structure of decisional balance for exercise adoption. Annals of Behavioral Medicine, 20, S211.

Nigg, C. R., Riebe, D., Rossi, J. S., Stillwell, K. M., Garber, C. E., Burbank, P. M., & Clark. P. G. (2001). Do the transtheoretical model instruments for physical activity behavior apply to older adults? Medicine and Science in Sports and Physical activity, 33(5). S149.

Self-Efficacy

This part looks at how confident you are to do physical activity when other things get in the way. Read the following items and fill in the circle that best expresses how each item relates to you in your leisure time. Please answer using the following 5-point scale:

1	2	3	4	5
Not at all Confident	Somewhat Confident	Moderately Confident	Very Confident	Completely Confident

I am confident I can participate in regular physical activity when:

- | | | | | | |
|--|---|---|---|---|---|
| 1. It is raining or snowing or icy..... | 1 | 2 | 3 | 4 | 5 |
| 2. I am under a lot of stress | 1 | 2 | 3 | 4 | 5 |
| 3. I feel I don't have the time | 1 | 2 | 3 | 4 | 5 |
| 4. I have to do physical activity alone | 1 | 2 | 3 | 4 | 5 |
| 5. I don't have access to a place for physical activity..... | 1 | 2 | 3 | 4 | 5 |
| 6. I am spending time with friends | 1 | 2 | 3 | 4 | 5 |

SCORING

The mean is calculated for all 6 items. All 6 items are a general Self-Efficacy scale representing the six factors. The long form (3 items per factor) may be obtained from the primary author (Nigg).

SOURCES:

Adapted from: Nigg, C. R., & Riebe, D. (2002). The Transtheoretical Model: Research review of exercise behavior and older adults, (pp. 147-180). In P. Burbank & D. Riebe (Eds.), Promoting exercise and behavior change in older adults: interventions with the Transtheoretical Model. New York, NY: Springer Publishing Company.

Benisovich, S. V., Rossi, J. S., Norman, G. J. & Nigg, C. R. (1998). Development of a multidimensional measure of physical activity self-efficacy. Annals of Behavioral Medicine, 20, S190.

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Temptations not to Exercise

Using a 0 to 100% scale, please indicate how tempted you are **NOT** to exercise in the following situations

1. When you're angry
2. When you feel satisfied
3. When you're stressed
4. When you feel that you don't have the time
5. When family events or situations interfere
6. When you're busy
7. When you have work to do

Questionnaire items

Affect (1, 2, 3)	Competing Demands (4, 5, 6, 7)
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SCORING:

The mean of item 1, 2, and 3 is calculated for Affect and the mean of 4, 5, 6, and 7 is calculated for Competing Demands.

SOURCES:

Paxton, R. J., Nigg, C. R., Motl, R. W., McGee, K. A., McCurdy, D. K., Horwath, C. C., & Dishman, R. K. (2008). Are Constructs of the Transtheoretical Model for Physical Activity Measured Equivalently Between Sexes, Age Groups, and Ethnicities? Annals of Behavioral Medicine, 35, 308-318.

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ORIGINAL SOURCE

Hausenblas, H.A., Nigg, C.R., Dannecker, E.A., Symons, D.A., Ellis, S.R., Fallon, E.A., Focht, B.C. & Loving, M.C. (2001). A missing piece of the transtheoretical model applied to exercise: Development and validation of the temptation to not exercise scale. Psychology & Health, 16, 381-390.