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## EXAMINATION OF THE PHASES OF BEHAVIOUR CHANGE AMONG PARTICIPANTS OF THE LIFESTYLE CHANGE PROGRAMME

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*ABSTRACT: Developing and maintaining a healthy lifestyle is an important and up-to-date topic for the Hungarian Defence Forces, too. A health-conscious lifestyle, which helps achieve the mental and physical well-being of the soldiers of the Hungarian Defence Forces and increases their deployability, may be adopted with the help of intervention programmes focusing on lifestyle change. The Hungarian Defence Forces Body Composition Programme (hereinafter referred to as HDF BCP) was introduced in 2015 in accordance with the above. According to Article 12 of Decree No. 10/2015 (VII.30.) of the Hungarian Ministry of Defence on medical, mental and physical fitness for military service and on the review procedure,<sup>1</sup> a soldier who has different parameters than the physical recommendation must be offered a participation in the HDF BCP. Based on the starting body weight and body fat percentage of the soldier, a weight loss schedule is determined which is to be met every three months during a 12-month period. Within the framework of the Programme, this study examined the distribution of participants of the Programme according to the stages of the behavioural change process, on which the transtheoretical model (TTM) was based. According to the results of the literature, the effectiveness of the lifestyle change programs and the possible number of dropouts are greatly influenced by the stage of change in which participants are.*

*KEYWORDS: behaviour, health, Hungarian Defence Forces Body Composition Programme, lifestyle*

### REVIEW OF LITERATURE

By examining the process of behaviour change, we sought an answer to the question of how, through what processes, health-damaging behaviour is quit and new behaviour is developed.<sup>2</sup>

Prochaska, DiClemente and Norcross developed their transtheoretical model of behaviour change, which describes intentional behaviour change and was first used in the treatment of addicts, by integrating several cognitive and behaviour models, and pointed to the possible ways of acquiring positive behaviour.<sup>3</sup> The model can demonstrate the processes that take place in the behaviour of an individual and can assign individuals to one of its stages. Practically, it can

<sup>2</sup> Urbán, R. *Az egészségpszichológia alapjai*. Budapest: ELTE, Eötvös Kiadó, 2017. 325.

<sup>3</sup> Czeglédi E. "A viselkedésváltozás tranzsteoretikus modelljének alkalmazási lehetőségei az elhízás kezelésében". *Mentálhigiéné és Pszichoszomatika* 13/4. 2012. 411-434. DOI: [10.1556/Mental.13.2012.4.4](https://doi.org/10.1556/Mental.13.2012.4.4)

be adapted to any disease or lifestyle change, making step-by-step communication easier and revealing information about emerging problems, e.g. on what level a person got stuck.<sup>4</sup>

There is no “royal path” in the field of efficient weight loss intervention, either. Certain methods are very efficient for some obese individuals, whereas they are less efficient, or are even inefficient, for others. The reason for this, as Teixeira, Going, Sardinha and Lohman argue, is that the success of weight loss treatment depends on the characteristics of the treatment and of the given individual, as well as on the interaction of these two. Patients starting lifestyle-changing therapies and weight loss treatments, and changing their physical activities, without being ready for the multiple changes that are required for an efficient lifestyle change affecting several areas of their life may play a role in their dropout.<sup>5</sup>

## PRESENTATION OF THE TRANSTHEORETICAL MODEL OF BEHAVIOUR CHANGE (TTM)

The transtheoretical model of behaviour change (one that spans several theories) was originally introduced as an integration of the theories and concepts of clinical psychology to understand the process of change.<sup>6, 7, 8</sup>

TTM is an integrative model of behaviour change which encompasses process-oriented variables to explain and predict when and how persons change their behaviour.<sup>9</sup> They thought a model was needed which could be applied to the entire population, not only to those who are motivated to lose weight.

## STAGES OF BEHAVIOUR CHANGE

The stages of behaviour change have already been described in detail.<sup>10</sup>

### 1. Precontemplation

People in this stage do not intend to change their physical activity, to lose weight, or to control their weight, in the foreseeable future (in the next six months). The absence or inadequacy of information about the unfavourable consequences of overweight may play a role in the fact that people who lead an unhealthy lifestyle, and overweight people, do not see their excess weight as a problem. Previous, failed weight-loss attempts may also

<sup>4</sup> Prochaska, J. O., DiClemente, C.C. and Norcross, J.C. “In search of how people change: Applications to addictive behaviors”. *American Psychologist* 47/9. 1992. 1102-1114.

<sup>5</sup> Teixeira P.J., Going S.B., Sardinha L. B. and Lohman T.G. “A review of psychosocial pre-treatment predictors of weight control”. *Obesity Reviews* 6/1. 2005. 43–65. DOI: [10.1111/j.1467-789X.2005.00166.x](https://doi.org/10.1111/j.1467-789X.2005.00166.x)

<sup>6</sup> Prochaska, J. O. and DiClemente, C.C. “Transtheoretical therapy: Toward a more integrative model of change”. *Psychotherapy: Theory, Research and Practice* 19/3. 1982. 283.

<sup>7</sup> Prochaska, J. O., DiClemente, C.C. and Norcross, J.C. “In search of how people change: Applications to addictive behaviors”. *American Psychologist* 47/9 1992. 1105.

<sup>8</sup> Prochaska, J. O., Norcross, J.C. and DiClemente, C.C. *Valódi újrakezdés. Hatlépcsős program ártaalmas szokásaink leküzdésére és életünk jobbá tételére*. Budapest: Ursus Libris, 2009. 98.

<sup>9</sup> Johnson, S.S. et al. “Transtheoretical model-based multiple behavior intervention for weight management: Effectiveness on a population basis”. *Preventive Medicine* 46/3. 2008. 238-246. DOI: [10.1016/j.ypmed.2007.09.010](https://doi.org/10.1016/j.ypmed.2007.09.010)

<sup>10</sup> Prochaska, J. O. and Prochaska, J.M. “Behavior change”. In D. B. Nash, J. Reifsnnyder, R. J. Fabius and V. P. Pracilio (eds.), *Population health: Creating a culture of wellness*. Sudbury: Jones and Bartlett, 2011, 25.

discourage individuals and undermine their faith in their ability to change. People in this stage are not ready for traditional health promotion programmes; these just do not work for them.

## 2. Contemplation

Although people in the contemplation stage do not make any effort to lead an active lifestyle change or lose weight, they seriously contemplate starting it in the next six months. They are more aware of arguments for health promotion but arguments against change are also present to the same extent. The balance of advantages and disadvantages, which results in ambivalence, leads to the fact that overweight people who avoid physical activities stay in this stage for a long time, contemplating over their problems and delaying action. People in this stage are not ready for traditional, action-oriented programmes which require immediate action, either.

## 3. Preparation

In this stage, people intend to start a health-conscious lifestyle, or to lose weight, in the near future, i.e. in the next month. Typically, they have already made some steps to achieve this goal (e.g. they use sweeteners instead of sugar, go for a walk after dinner from time to time, etc.). People in this stage make action plans, e.g. they are planning to consult a specialist (general practitioner, life coach, dietitian, naturopathic practitioner), or read about diet. They are ready for change, and traditional, action-oriented health promotion programmes are likely to work for them.

## 4. Action

People in the action stage are those who actively strive for changing their lifestyle or controlling their body weight, and have achieved results in this field by clear, specific lifestyle changes; however, this has been taking place for less than six months. For example, they limit their daily energy intake to 1,700 calories, avoid fast food restaurants, eliminate sugared soft drinks from their diet, do regular exercise, always walk instead of taking the lift, and chose an alternative activity (e.g. walking, jogging) instead of eating when they are tired, sad or distressed. All this requires enormous dedication and effort from an individual. Lifestyle changes and weight loss are usually evident for the individual's environment as well, and that is when it gives the most appreciation, encouragement and support to the person. We have to emphasize that action does not equal change. Several developments which are necessary to induce behaviour change (e.g. changes in self-image or thinking) take place in the pre-action stages.

## 5. Maintenance

Those people belong here who have maintained their achieved lifestyle change for at least six months. There is no consensus with respect to what changes are considered to be successful; this largely depends on how the given person perceives them in his own life. General characteristics of this stage include that the person actively works on preventing relapse; he is less threatened by temptations; at the same time, he becomes more and more confident in his ability

to maintain the changes he has achieved so far<sup>11</sup>. Although the above may be well explained and seem valid for several kinds of health-damaging behaviour (especially for smoking), it is less true for weight management. Weight control in obesogenic environments practically constantly requires resistance to temptation and demands permanent efforts in the field of diet limitations and physical activities. Consequently, the argument of Kristal et al.<sup>12</sup> that the action and the maintenance stage with respect to diet change should be interpreted within the framework of the development and persistence of cognitive and behavioural alertness connected to healthy food choices is justified and acceptable. In the stage of action, the person tries to acquire a number of new behaviours. With respect to specific behaviours, he may be in various stages of change at the same point in time. A person in the maintenance stage, however, has already acquired a sufficient number of behaviours to achieve the goal, but needs to check the changes and efforts in his new lifestyle to achieve long-term maintenance. In this context, fluctuations between action and maintenance are to be perceived positively and not as a relapse. All these take us closer to the understanding of the characteristics of the maintenance stage in the context of behaviour change connected to lifestyle management.

## 6. Termination

In general descriptions of TTM, people in the stage of termination are no longer tempted, and their self-efficacy is 100%. No matter what their mood is, they will definitely not return to their previous health-damaging habits as a coping method. In accordance with the above, the termination stage seems less applicable to weight management because overweight people rarely achieve the healthy weight range. No matter how much weight they lose, maintaining their weight and physical activities represent practically a lifelong challenge for them: they need long-term restrictions in eating and permanent energy input in physical activities, so maintaining the behaviour change requires constant efforts from the person;<sup>13</sup> if due to nothing else but to inevitable weight gain that comes with ageing.<sup>14</sup> Prochaska admit that in areas such as physical activity or weight control, *the realistic goal is a lifelong persistence in the maintenance stage*. They highlight that the termination stage gets much less emphasis in TTM research, partly because of the limitedness of its practical reality, and partly because it appears well after the end of the intervention.<sup>15</sup>

Generally, only a relatively small proportion (mostly less than 20%) of the threatened populations are ready to act.<sup>16</sup> However, readiness to change usually evolves in a more favourable way in the field of weight control. Time spent in the various stages shows high individual variability. It can take years, although the tasks required to step further are the same.

In each stage, certain principles and change developments work most efficiently for reducing resistance, promoting progress, and preventing relapse. Progress between the stages is not necessarily linear, since *relapse is inevitable in the process of behaviour change*.<sup>17</sup>

<sup>11</sup> Prochaska and Prochaska. "Behavior change". 29.

<sup>12</sup> Kristal, A. R. et al. "How can stages of change be best used in dietary interventions?" *Journal of the American Dietetic Association* 99/6. 1999. 681. DOI: [10.1016/S0002-8223\(99\)00165-0](https://doi.org/10.1016/S0002-8223(99)00165-0)

<sup>13</sup> Baranowski T. et al. "Are current health behavioral change models helpful in guiding prevention of weight gain efforts?" *Obesity Research* 11. 2003. 34.

<sup>14</sup> Hu, F. B. *Obesity epidemiology*. New York: Oxford University Press, 2008. 42.

<sup>15</sup> Prochaska and Prochaska. "Behavior change".

<sup>16</sup> Prochaska and Prochaska. "Behavior change". 32.

<sup>17</sup> Prochaska, Norcross and DiClemente. *Valódi újrakezdés...* 103.

## INTRODUCTION OF THE HDF BCP

The HDF BCP is a complex lifestyle change support programme, which provides professional assistance to soldiers committed to lifestyle change. The programme is adjusted to the participants' needs, personal goals as well as physical condition and health. During the first consultation, the applicant's goals, schedule and available resources are determined. Every participant – mainly cadre personnel and contract soldiers – receives a programme which sets realistic goals for the next 12 months and for which constant support is provided by experts working in the programme. The body composition recommendation introduced as a regulation by the Ministry of Defence 10/2015. (VII. 30.) is based on the US Army Body Composition Program<sup>18</sup> and is in accordance with the military health disciplines set in NATO doctrines as well as with the prevention policy and health promotion goals of the Hungarian Defence Forces.

Application is currently optional and free of charge. Soldiers whose body composition parameters differ from the recommended standards (see charts), need to be offered the possibility to enter the programme.

Chart N. *Own editing*: Maximum allowable weight

Chart O. *Own editing*: Minimum and maximum recommended body fat percentage by age groups

Chart P. *Own editing*: Ideal BMI values by age groups

## PROCEDURE

During the first session, the participant's lifestyle is assessed in detail both by objective, instrumental (body composition, cardiac stress, fitness) and subjective methods (questionnaire-type). For a successful programme, the participant's level of motivation, reasons for their previous lifestyle change, successes and difficulties need to be understood and taken into consideration when forming new habits. Furthermore, more information is needed regarding possible changes in the participant's health so that the programme can have an optimal effect even in the presence of health deficits. The participant's lifestyle is assessed by using SAQ (self-assessment questionnaire), which includes internationally accepted questions suitable for independent assessment as well. The assessment is carried out before the first session. Within the 12-month programme, participants are re-evaluated every 3 months so as to introduce individual changes concerning both the diet and the exercise programme if necessary.

## ASSESSMENTS

The OMRON BF 511 type body composition monitor is used to assess changes in the body composition (body weight, BMI, body fat%, skeletal muscle%, visceral fat and rest metabolism). Initial screenings are carried out monthly, later every three months. The professional analysis of body composition, nutrition and fitness is based on the BIA 500 bio-electronic impedance analyser, where body fat, lean body mass, water content (intra- and extracellular fluid), cell ratio and phase angle are assessed and compared to the ideal, optimal and special targets. The documentation contains a written evaluation with figures

<sup>18</sup> "AR 600-9: The Army Body Composition Program". 28. June 2013. [http://www.wood.army.mil/sapper/document\\_frames/ar600\\_9.pdf](http://www.wood.army.mil/sapper/document_frames/ar600_9.pdf)

as well as detailed recommendations for the participants. The regular comparison of body composition assessment results enables us the evaluation and optimization of the diet and exercise programme. Medical treatment and diagnostic tests are not carried out in the programme.

The results provide a complex picture on the physical condition and nutrition of the participant, making the diet and exercise programme controllable. The aim is to reduce calorie intake; therefore, the daily calorie intake will be prescribed during the sessions and participants will be given a one-week sample menu. The recommended daily calorie intake is based on the participant's rest metabolism and amount of physical exercise. During the first 4 weeks of the programme, the daily calorie intake equals the resting metabolic rate and is later increased by +10%; this, of course, might change depending on the rate and speed of weight loss. The number of calories burnt during exercise is generally 250-350 kcal; participants' individual target pulse rate for exercising is also identified depending on their fitness level and body composition.

## SAMPLE, METHODS, ASSUMPTIONS

### Sample

In total, 68 persons participated in the examination (n=68). Their average age was 35 + 7,9 years and, as for their gender distribution, the proportion of women was 56%. The respondents were typically university graduates. Some participants have already had experience with one or more unsuccessful lifestyle change programmes.

### Methods

We used a self-completion questionnaire in the research. We sought an answer to the following question: *In your opinion, where do you stand in the transition to a physical activity you consider more regular or to a diet you consider healthier?*

The participants in the Programme had to select one of the five possible statements which were as follows.

1. I do not intend to shift to a physical activity I consider more regular or to a diet I consider healthier in the next six months (precontemplation phase).
2. I feel a strong urge to shift to a physical activity I consider more regular or to a diet I consider healthier (contemplation phase).
3. In the next one month, I am going to take steps to shift to a physical activity I consider more regular or to a diet I consider healthier (preparation phase).
4. During the last six months, I shifted to a physical activity I consider more regular or to a diet I consider healthier (action phase).
5. I have been doing physical activities/eating more healthily for more than six months, and the chances of relapsing to my old habits are minimal (maintenance phase).

### Assumptions

Concerning the study, the following assumptions have been formulated:

- We have assumed that most of the participants in the HDF BCP are in the stage of preparation and /or action.

- We have assumed that concerning physical activity, participants reached more advanced stages of behavioural change than in nutrition.

## RESULTS

Based on the results, we may establish that all the participants in the HDF BCP have already passed the precontemplation phase with respect to physical activity as well as a healthier diet. This is understandable, since their application for the Programme must have been preceded by the precontemplation phase, for this is already a “second step” with respect to change. In the field of physical activity, the majority of the participants (34%) were in the contemplation phase, although many of them (30%) were already in the preparation phase. 21% of the current participants were in the action phase, whereas the fewest of them (15%) were in the maintenance phase (*Figure 1*).

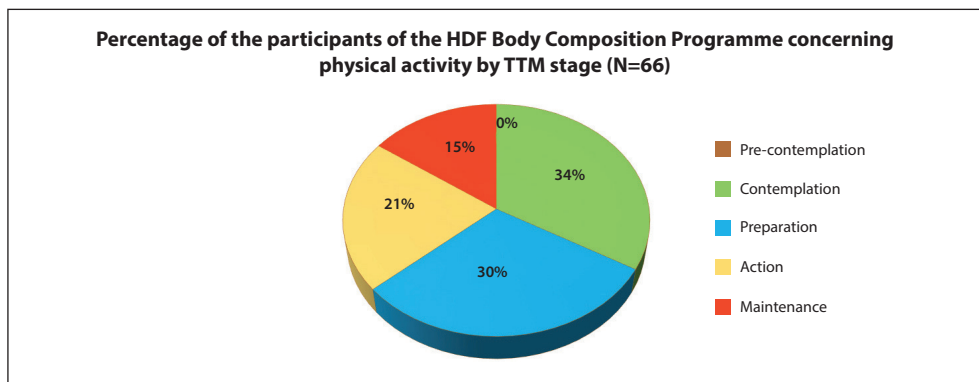


Figure 1: Distribution of the HDF BCP participants according to TTM stages with respect to physical activity (N=66)

In the field of diet, the majority (32%) of the respondents were in the precontemplation phase, 28% were in the contemplation phase, and 27% ranked themselves into the action phase. 13% of the respondents were in the maintenance phase (*Figure 2*).

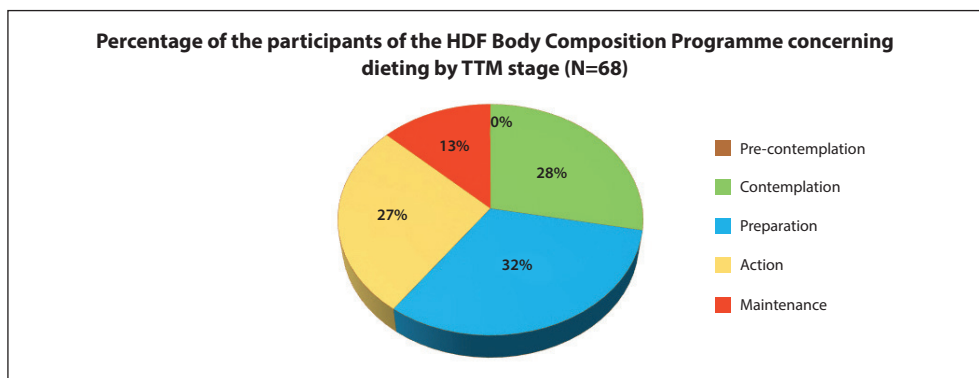


Figure 2: Distribution of the HDF BCP participants according to TTM stages with respect to diet (N=68)

## SUMMARY

Initially, it was assumed that the majority of the applicants would be in the stage of preparation and action concerning physical activity and healthy eating habits. Considering that the application in the HDF BCP is currently optional which assumes awareness of the problem and searching for solutions. This assumption was only partly justified, as regarding exercise, the majority of the applicants were still in the stage of contemplation; whereas regarding a healthy diet the majority of them were in the stage of preparation, some still in the stage of contemplation. It was also assumed that considering the profession itself – the personnel of the Hungarian Defence Forces have to undergo annual physical screening tests – the participants had reached more advanced stages of behaviour change concerning exercise than diet. This hypothesis failed, as a higher percentage of the participants were found in the stage of preparation concerning diet than concerning regular physical activity. A similar distribution of the participants can be found regarding both the increase of physical activity as well as developing/maintaining a healthy diet. It was found that while concerning physical activity, the majority of the participants were in the stage of contemplation, regarding diet change, they were in the stage of preparation. This is understandable if we consider that fact that while introducing or increasing the amount of regular physical activity in a person's lifestyle requires extra time and energy, the time for eating is given. Regular dieting – in most cases – is part of everyday life, the change needed might be qualitative or quantitative, which might require less extra time and energy than the introduction of daily physical activity.

Appearance showing physical strength and stamina, which is part of military identity, cannot manifest itself in case the soldier's body weight and body fat percentage are above the prescribed standards. This might decrease physical and medical aptitude as well as individual readiness. The HDF BCP – currently optional – provides complex professional support for the army personnel so that they can meet the body composition requirements, and last but not least, supports the development of health education policy in the Hungarian Defence Forces.<sup>19</sup> Besides monitoring the participants, our aim is to identify the factors which need to be emphasized more in the programme (in our case the introduction of regular physical activity) as well as to support soldiers committed to a lifestyle change as effectively as possible.

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<sup>19</sup> Novák, A., Sótér, A., Rázsó, Zs. and Juhász, Zs. “Harc az elhízás ellen: a Honvéd Testalkati Program. Morfológia és metodika”. *Honvédségi Szemle* 145/3. 2017. 74-86. [https://honvedelem.hu/files/files/63128/hsz\\_2017\\_3\\_beli\\_074-086.pdf](https://honvedelem.hu/files/files/63128/hsz_2017_3_beli_074-086.pdf)



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