



***Evaluating Health
and Physical Fitness***

Factors that Affect Fitness

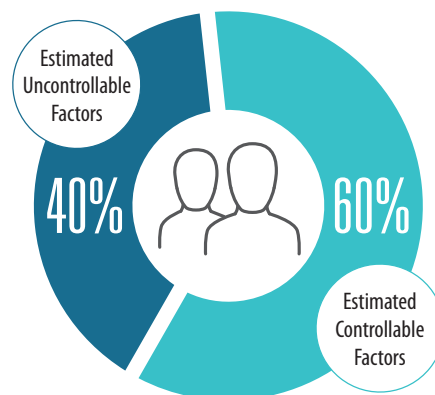


Baseline measures of fitness are heavily influenced by genetics, environment, and the stress the body experiences on a day-to-day basis. For a completely **sedentary** person, the strongest independent factor of health and fitness, other than the lack of activity, will be **genetic predisposition**; however, genetics alone do not fully account for a person's physical fitness. While the DNA blueprint begins as the foundation for all internal controls, environmental and eugenic factors can modulate genetic expression and activity. External environmental factors will all have implications for what occurs within the body: temperature, altitude, nutrition sufficiency, voluntary/involuntary stress, prenatal nutrition, and diet can all have an impact. Additionally, individual interests, education, and socio-economic factors all affect a person's physical fitness^(1, 3, 6).

Genetics contribute to the measurable aspects of physical fitness at any given time during a person's lifespan and ultimately determine the body's potential capabilities. A person's genetics are estimated to account for at least 40%, and up to 66%, of uncontrolled, hereditary factors that affect physical health and performance components of fitness^(8, 9, 18, 20). With this being said, that leaves approximately 40-60% of controllable (or somewhat-controllable) factors that can be manipulated for improvement. Regardless of genetic makeup, virtually everyone can improve his or her health or performance by engaging in activities and behaviors that impact the body positively.

Numerous environmental factors affect physical fitness, with each primary factor carrying a subset of co-factors. These factors may be socially driven, such as those derived from one's family and friends, or from work-setting environments inclusive of influences of colleagues and supervisors. This implies a range of values, attitudes, financial means, and societal opportunities that impact the individual. Other factors may be physical, such as climate, altitude, exposure to pollutants, and access to resources. Early learned behaviors yield very powerful influences on the lifestyles of adults. Individuals born into families that place little value on healthy behaviors often

Behaviors vs. Genetics Controllable vs. Uncontrollable Factors Affecting Physical Fitness



DEFINITIONS

Sedentary –

Describes a lifestyle behavioral pattern that includes very little physical activity.

Genetic predisposition –

Increased propensity towards a conditioning or outcome based on one's inherited genes.

do not have the habits or background knowledge to support positive choices. On the contrary, families that recognize the importance of health, emphasize it through routine health promotion and have the means to fulfill the financial requirements of total wellness are much more likely to engage in positive health behaviors. Many people who do not meet the guidelines for physical activity simply do not have the means to support proper nutrition and suffer greater risk of exposure to negative influences, which they often transfer to their children. Therefore, formative attitudes and behaviors from childhood to adulthood serve as a major consideration, since the behaviors established during one’s youth potentially exert the strongest influences on what one does as an adult. During adulthood however, social environments are suggested to play a greater impact than family influences.

Interest also plays a key role in the types of behaviors in which people partake. Individual use of discretionary time is often connected with personal responsibility and enjoyment. Few people will voluntarily engage in activities that they find unpleasant. Individuals often preferentially select enjoyable activities over those without positive emotional associations. Exposure to a variety of activities during youth allows individuals to evaluate their interests and make decisions about adopting them into their lifestyle habits. In some cases, knowledge as to the benefits of certain activities or behaviors influences participation even when certain activities are perceived as less pleasurable. A sense of responsibility for one’s health may cause people to exercise or eat right, even though they might prefer to make other decisions in the absence of consequences. Education factors importantly in this decision-making process. Individuals who understand that quality of life (QOL) outcomes closely link to one’s health, participate more readily in healthy behaviors. For example, a person looking to have an active retirement may begin to emphasize healthy behaviors as they age in order to accomplish active retirement goals. Likewise, knowledge is paramount: understanding what benefits the body and what impacts health negatively profoundly informs the decision-making process associated



Basic factors that impact fitness:



Genetics, age and sex



Environmental factors



Social factors



Stress



Nutrition



Levels of daily activity



Education and economic factors

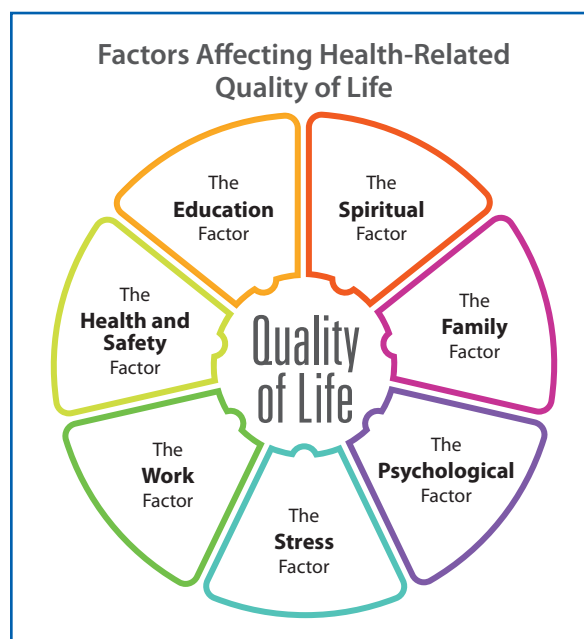
with physical activity participation. Even with the vast amounts of information available today, many people simply do not know how to implement healthy routines and habits. Granted, people know they should eat right and exercise, but what does that actually mean without reliable knowledge of what's truly healthy? Implementation of positive behaviors requires knowledge of the “whats and how-tos.” Therefore, leadership in consumer education represents an important aspect of the fitness professional's job.

◆ Physical Activity & Life Quality



The World Health Organization has acknowledged health-related quality of life (HRQL) as an important outcome from wellness behaviors. In 1982, Kaplan and Bush coined this multidimensional concept that acknowledges the influences that health status has on tangible and perceived measures of life quality⁽¹³⁾. Clinical data has shown that physical activity has significant potential to positively influence a person's HRQL^(7,26,33). The areas that seem most directly affected include physical and psychological well-being, perceived physical function, and stress reduction. Additionally, a positive association exists between physical activity and self-efficacy in people of all ages⁽²⁶⁾.

The perception of improved physical function in activities of daily living (ADLs) is one important effect of physical activity. Although most people can perform daily tasks, the ease or proficiency of accomplishing physical work seems to improve with regular physical activity. Individuals suffering from maladies, such as heart disease and arthritis, who participate in physical activity report the highest rate of perceived improvement in daily functional capabilities^(2,14,32). In clinical trials, self-reported outcomes identified improvements in physical function and health in subjects who engaged in aerobic physical activity compared to sedentary controls⁽⁷⁾. Again, the individuals diagnosed with disease presented the greatest magnitude of positive improvement in both physical and psychological measures: understanding, of course, that they also had the most room to improve. This information is relevant from two perspectives: first, that routine engagement in exercise profoundly affects life quality and disease prevention, and secondly, that those with disease not only benefit but experience exponential improvements. The concept that exercise and physical activity can be used for



medicine is rapidly gaining momentum across the world. According to the World Health Organization, in highly developed countries, the predominant causes of **premature mortality** and overall **mortality** are controllable diseases⁽²⁴⁾. Essentially, we are our own worst enemies, but concurrently also hold the solution to our potential health problems.

◆ Physical Activity & Risk for Injury

Exercise can help most people improve their QOL^(7,14), which holds true for apparently healthy individuals and also those diagnosed with disease. Exercise though, also offers the potential for negative outcomes if performed incorrectly, too aggressively, or too often. Training volume represents the combination of participation time and exercise intensity. Athletes are consistently at risk for injury simply due to their large quantity of daily activity. Individuals who increase physical activity should be familiar with the inherent risk of injury. Several types of common injuries are associated with exercise and sports participation. New exercisers are at particular risk for soft tissue strains, tears, and even stress fractures from inappropriately applied stress and repetitive motions that occur without proper acclimation to these increased demands. Progressing intensity levels too aggressively associates with greater risk for multiple-cause injuries. This represents one of the most common errors in new training programs, often resulting from a lack of knowledge, combined with a newly inspired motivation. Lower extremity injuries seem to be reported most commonly: in particular, at the articulation sites of the ankle, knee, and foot^(28, 29). Too much exercise implemented too quickly and/or too often will cause the onset of acute overuse injuries. Likewise, attempting a routine without the requisite training or education can also lead to a less than positive outcome. Special consideration for body acclimation should be made for new exercisers and those returning after an extended period of cessation.

Novice exercisers have an increased risk for the following when proper acclimation periods are not applied:

Muscle or tendon strains

Ligament sprains or tears

Bone fractures

Exercise participation also includes the possibility of metabolic injury. This injury, although rare, is mainly associated with prolonged duration, a pre-existing exercise condition, and/or environmental influences. Thermoregulatory dysfunction and abnormal metabolite concentration can be life threatening. Conditions such as **hyperthermia**, **hypothermia**, hypoglycemia, **rhabdomyolysis**, **hyponatremia**, and other electrolyte imbalances all may present acute life-threatening emergencies. Appropriate dietary considerations and fluid consumption, acclimation to stress, prudent decision making, and pre-exercise screening can help prevent incidences related to these issues. When exercise is implemented in a logical manner and considerations are made for



DEFINITIONS

Premature mortality –

A measure of unfilled life expectancy or death before age 75, usually caused by preventable factors.

Mortality –

Refers to death that occurs in a population or other group. It is often utilized as a term in research studies that examine rate of death due to a specific disease or ailment.



DEFINITIONS

Hyperthermia –

A potentially dangerous increase in body temperature above normal levels which can lead to heat-related illnesses, such as heat cramps, exhaustion, or stroke.

Hypothermia –

A potentially dangerous decrease in body temperature below normal levels which can lead to diminished neuromuscular control, frost-bite, or death: body temperature below 95.0 °F (35.0 °C).

Rhabdomyolysis –

A potentially life-threatening condition resulting from the destruction of muscle tissue and subsequent release of muscle fiber content into the blood stream which may cause failure of major organs.

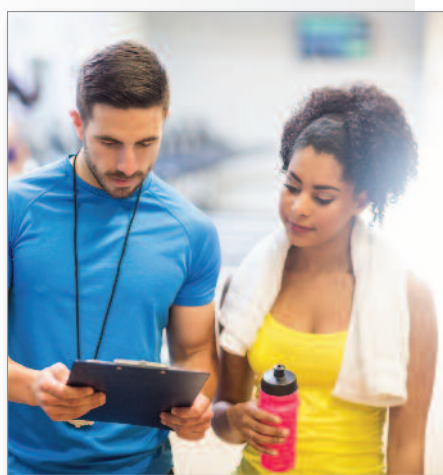
Hyponatremia –

Refers to a below-normal plasma sodium concentration (<135 mmol/L); it can be caused by excessive water consumption and is most commonly seen during endurance training in the heat.

environmental stress and safety, the risks for injury are very low. Exercise professionals must create conditions that present the safest situation for their clients, and to avoid any problems or risks, this should include pre-exercise screening for potential conditions and pre-exercise checklists for acute disorders.

Common Activities and Associated Injuries

Jogging/Running	<i>Torn cartilage, tendonitis, plantar fasciitis, shin splints</i>
Bicycling	<i>Ulnar nerve palsies, ischial bursitis, Achilles tendonitis, lower back pain</i>
Swimming	<i>Shoulder pain, shoulder impingement syndrome</i>
Aerobic Dance	<i>Shin splints, plantar fasciitis</i>
Tennis	<i>Epicondylitis, tendonitis</i>



Considerations for Pre-Exercise Screening

Pre-exercise screening can pave the way for appropriate program modification that can help reduce the risk of many conditions affecting individuals during physical activity participation, particularly those known to cause death. For some individuals suffering from cardiovascular pathology, exercise may cause more harm than good. Individuals at risk may incite abnormal heart rates or rhythms due to a compromise to their coronary circulation during exertional stress. **Arrhythmias, acute angina,** and myocardial infarction may be precipitated by physical exertion in the presence of heart disease. Sudden death is not common but a definite possibility for high risk exercisers who participate without prior evaluation. It is important to recognize that these risks occur both during participation in the activity and also immediately following exercise. However, from a risk vs. benefit perspective, regular activity for medically-cleared participants yields more protective effects from disease than the risk for injury from an exercise-related cardiovascular event. Those designated as high risk are expected to exercise under expert supervision in specific cardiac care environments for optimal safety.

Another condition increasingly present among the United States population is **type 2 diabetes mellitus (T2DM)**. This metabolic condition is multi-factored and presents additional concerns during exercise. Clearly, the root to solving the population rise in T2DM lies in routine physical activity in conjunction with structured diet and exercise. Lipid infiltration into cells, desensitized endocrine receptors, and autoimmune dysfunction collectively create a metabolic setting that presents ongoing difficulty for sugar management. Diabetics cannot control their blood glucose properly under natural conditions, however exercise and physical activity play a large role in the ability to manage the phenomena. The problem and benefit lies in the tissues' metabolic response. Exercise invigorates cells and glucose receptors to better manage blood glucose; however, if the diabetic condition is not controlled, the activity may cause hypoglycemia, leading to a diabetic coma. Diabetics also must contend with hyperglycemia; however, due to the blood sugar used by muscle contractions during exercise, it does not present the same risk



DEFINITIONS

Arrhythmia –

A potentially-dangerous abnormal heart rhythm which can be caused by physical exertion or without activity in cases where there is an issue with the cardiovascular system or presence of disease.

Acute angina –

A short-term chest pain caused by reduced blood flow to the heart. It is often precipitated by exertion and associated with cardiovascular disease.

Type 2 diabetes mellitus (T2DM) –

A metabolic disorder characterized by high blood sugar, insulin resistance, and relative lack of insulin production; it primarily occurs as a result of obesity and lack of physical activity.

during physical activity. Exercise professionals should be aware that T2DM damages the vascular system due to chronic hyperglycemia, so getting oxygen to tissues may be compromised in those with later stage disease. This is particularly concerning for the heart, so diabetics should be thoroughly pre-screened for heart disease prior to the initiation of an exercise program.

Other health concerns related to exercise may warrant attention as well. Overtraining increases risk for infection from immuno-suppression and can cause stress-related injuries⁽¹⁰⁾. Likewise, pre-existing conditions, including asthma, tachycardia, abnormal heart murmurs, musculoskeletal injury, osteoporosis, hypertension, sickle cell anemia, and arthritis, all call for specific special considerations, as these can lead to additional problems during exercise participation. Studies show that previous injury and existing conditions strongly predict subsequent physical activity related injury^(5,12). Although a myriad of adverse events can be associated with physical activity, the benefits of participation still far outweigh the problems inherent to a sedentary lifestyle.



Contribute to a reduced risk and consequence of physical activity-related injuries:

Identify risk factors and high-risk environments

Thoroughly screen participants

Provide structured acclimation to physical stress

Prescribe exercise within individual capabilities

Avoid activity when injured or when risk is elevated

Have an emergency plan

Pre-Exercise Screening

A significant quantity of evidence supports daily physical activity as a vital part of healthy aging. Data suggests that the absence of routine exercise constitutes far more danger to health than the inherent risks of physical activity^(25, 27). Although this may be true, cautious steps can and should be taken by exercise professionals when encouraging exercise participation. Pre-exercise health screening comprises an important part of health management services and is a defined task requirement for personal trainers. The primary purpose for screening a client before activity participation is to identify possible factors that may increase the risk of injury when performing exercise or a particular activity. Factors may include physical limitations, medical conditions, or behaviors that may put the client at risk for a negative outcome from exercise testing or physical activity participation. Failure to appropriately screen a client that leads to an untoward event places significant liability on the personal trainer and place of employment. Age appropriate health screening is always a necessary part of fulfilling the duty of care owed to anyone paying for professional fitness or health services.

Pre-exercise screening provides additional benefits beyond simply attempting to identify and reduce risks for injury associated with participation. Secondary purposes for screening clients before activity are listed here.



Benefits of Client Screening

1. Educating the client about relative health risks associated with their lifestyle, behaviors, and history.
2. Identifying current health status compared to recommended ranges.
3. Providing data that will be used to create a needs analysis as the basis for the exercise prescription.
4. Establishing starting points and predictions of performance.
5. Identifying particular interests, aptitudes, or possible limitations.

Screening for exercise participation has several advantages: it provides valuable information for creating an exercise prescription; it identifies client aptitude and interests in different types of activities; finally, it reveals short and long-term goals the client wishes to accomplish via training and health services. It is important to pinpoint the data most relevant to the purpose and goals identified through the screening process. This step allows the prescribed exercise

program to start with a high likelihood for success and allows the client to participate with very low inherent risk. Note that part of the screening process involves an evaluation of psycho-emotional interest in physical activity. This allows one to gain insight into the motivation behind the decision to initiate exercise as well as an indication of the participant's potential exercise tolerance. This awareness is all very helpful in guiding decisions concerning starting points and potential motivators. The concept of "exercise tolerance" represents a relative consideration of how hard a person will work before perceiving the activity to be undesirable from a cost-benefit perspective and quitting. Many individuals do not like moderate-to-high exercise intensities, preferring health-related activities such as walking instead. This creates a conundrum for many exercise professionals: all indications point towards using specific intensities for desired physical adaptations; however, the client will not comply because he or she objects to the perceived discomfort of the activity level and believes it not worth the effort. This scenario manifests commonly among those who start exercise programs due to physicians' recommendations. Exercise professionals need to understand, in this case, the value of compromise. While an exercise professional should want to provide optimal conditions to promote health and fitness, it may be better to accommodate the client's sensitivities to exercise. Simply put, a client may not be interested in exercising at the optimal levels to promote beneficial adaptations; regardless, it is always better to have someone engage in some physical activity compared to none at all. In these cases, the exercise professional's ethical duty is to explain that fitness cannot be attained at subthreshold training levels and provide adequate support to encourage routine compliance at the highest tolerable level. Forcing a resistant person to perform exercise intensities beyond their comfort level will simply end in attrition.

In the recent past, some have criticized requiring testing and evaluation for clearing individuals for an unrestricted exercise program^(4,19). Stringent screening protocols required men (>45 years) and women (>55 years) to undergo cardiac stress tests, cardiopulmonary tests, and in some cases, the completion of blood chemistry tests before being cleared for participation. The primary goal of this evaluation process is to identify those individuals who pose a risk for a cardiac event during exercise participation. Although this type of screening generates a thorough evaluation, the requirements are excessive and costly for participating in activities aimed at improving health. In addition, they may deter anyone already skeptical about initiating an exercise program⁽⁴⁾. Furthermore, cardiovascular events are not only rare and unpredictable, but cardiac stress tests and self-reported screening documents only effectively identify a small subset of individuals at risk^(15-17,22).

From a **liability** perspective, different screening level guidelines exist relative to the activity intensity and the individual; ignoring these may constitute a case of **professional negligence**. Exercise screening should not be an obstacle to participation or an unnecessary burden to initiating an exercise program but should serve a protective role. The screening protocols and depth of evaluation should always reflect the individual's needs. Whereas pre-exercise stress tests identify risk of participation in vigorous exercise, the reality is that most individuals engaging in activity do so at a moderate level of intensity. Novice and new exercisers, outside of those involved in fitness fads, rarely perform vigorous activity, and many people who exercise routinely never attain the interest or aptitude to participate in high-intensity exercise. The discomfort and the time it takes to acclimate to high-intensity training (HIT) or high intensity interval training (HIIT) deter this group. For this reason, comprehensive



DEFINITIONS

Liability –

The state of being responsible for something, especially by law; a personal trainer maintains a fiduciary responsibility to function in the best interest of the client.

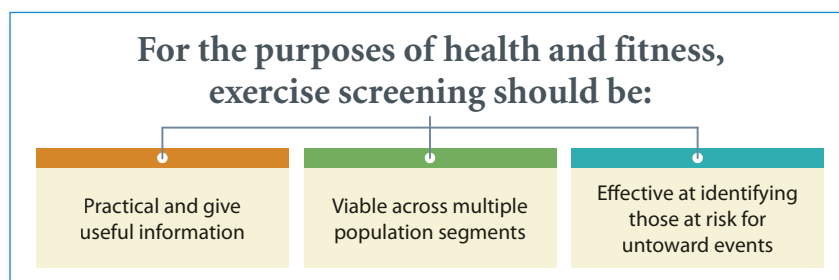
Professional negligence –

Failure to take proper care during standard protocol or to use reasonable care, potentially resulting in damage or injury to another person: doing something a reasonable person would not do or the omission of something that a reasonable person would do.



Exercise screening should not be an obstacle to participation or an unnecessary burden to initiating an exercise program - but should serve a relative protective role.

cardiovascular screening is not necessary unless indicated by a physician. A caveat to this discussion is the popularity of HIIT and similar protocols that make use of intense (typically grouped) activities accompanied with short rest intervals. Pre-exercise screening should always be specific to the individual and participation level of training. The goals of pre-screening are to safely get people to participate in physical activity and identify those individuals who truly need appropriate medical evaluation and clearance.



Exercise professionals should individualize the screening process as much as possible for two reasons: health problems and risks for potential problems are identified from the beginning, and the specific findings can be analyzed to create an exercise program that is result-based and tailored to the individual. Several documents are available and can be employed in conjunction with industry guidelines to help the screening process become more efficient and effective. Common forms often employed include: Informed Consent, ParQ+, Health Risk Appraisal, Health Status Questionnaire (HSQ), Behavior Questionnaire, and Medical History Questionnaire. In general, the minimum requirement of an appropriate pre-screening process should include a health and medical history that identifies pre-exercise risk factors: a previous injury, any medications being taken and the reason the client is being medicated, and any other conditions warranting further investigation.

◆ Informed Consent



The informed consent is not necessarily a screening form but a waiver of sorts that requests voluntary permission or consent for health screening, fitness evaluations, and/or exercise participation. It represents a knowing and willful consent by an individual or guardian for testing procedures or participation in physical activity after being properly advised of the relevant facts and risks involved. An informed consent is a valuable document for personal training services: it provides powerful legal defense against claims that suggest a client was not informed about the protocols and the inherent risks associated with the activities they were instructed to perform. By law, clients who are exposed to or may be subject to possible physical or psychological injury must give informed consent prior to participation in the activities this document describes^(11, 21, 30).

For the document to provide maximal protection for the exercise professional, company, or premises, it must include the following: a clear explanation of the contents; specific details related to the program and/or testing activities; risks and benefits that

come from participation in said activities. In order for the informed consent to provide maximal defense during litigation, the document should be administered and explained in easily understood terms in front of a witness, so that, without doubt, the client fully understands the written language of the form before signing. Initials by each paragraph or section identify that the client was properly informed of the information contained in all of the document's subsections. Additionally, in order to realize full disclosure and informed consent requirements, the reading level of the consent form must be comprehensible by the client. Thus, the educational level of the individual being serviced must be taken into account. Finally, the form should be provided in the client's spoken language to ensure he or she fully understands the described content^(23, 30, 31, 35).

The informed consent can serve, in part, as a liability waiver when implemented properly, using the appropriate language, and signed in the presence of a witness. Because of its legal implications, exercise professionals should use an agreement that has been reviewed and approved by an attorney to ensure the document's ability to serve its intended role. However, a signed informed consent does not prevent the client from taking legal action nor does it protect the exercise professional against negligence. It does, however, provide legal defensibility when the procedures in question have been correctly performed by a diligent, qualified practitioner. The informed consent should be the first document that is explained, signed, and added to a client's file. It serves as permission to move ahead with the personal training services, as it suggests the client is privy to the described procedures and expected outcomes. Once completed, the screening protocols can then be initiated.

Components of Informed Consent

- Background and purpose
- Assumed risks of participation
- Reasonably expected benefits
- Reasonable explanation of procedures
- Normal physiological expectations
- Opportunity for inquiry
- Right of refusal
- Right of confidentiality



INFORMED CONSENT

Purpose and Explanation of Service

I understand that the purpose of the exercise program is to develop and maintain cardiorespiratory fitness, body composition, flexibility, muscular strength and endurance. A specific exercise plan will be given to me, based on my needs and abilities. All exercise prescription components will comply with proper exercise program protocols. The programs include, but are not limited to, aerobic exercise, flexibility training, and strength training. All programs are designed to place a gradually increasing workload on the body in order to improve overall fitness.

Risks

I understand, and have been informed, that there exists the possibility of adverse changes when engaging in a physical activity program. I have been informed that these changes could include abnormal blood pressure, fainting, disorders of heart rhythm, stroke and very rare instances of heart attack or even death. I have been told that every effort will be made to minimize these occurrences by proper screening and by precautions and observations taken during the exercise session. I understand that there is a risk of injury, heart attack, or even death as a result of my participation in an exercise program, but knowing those risks, it is my desire to partake in the recommended activities.

Benefits

I understand that participation in an exercise program has many health-related benefits. These may include improvements in body composition, range of motion, musculoskeletal strength and endurance, and cardiorespiratory efficiency. Furthermore, regular exercise can improve blood pressure and lipid profile, metabolic function, and decrease the risk of cardiovascular disease.

Physiological Experience

I have been informed that during my participation in the exercise program I will be asked to complete physical activities that may elicit physiological responses/symptoms that include, but are not limited to, the following: elevated heart rate, elevated blood pressure, sweating, fatigue, increased respiration, muscle soreness, cramping, and nausea.

Confidentiality and Use of Information

I have been informed that the information obtained in this exercise program will be treated as privileged and confidential and will consequently not be released or revealed to any person without my express written consent. Any other information obtained, however, will be used only by the program staff to evaluate my exercise status as needed.

Inquiries and Freedom of Consent

I have been given an opportunity to ask questions about the exercise program. I further understand that there are also other remote health risks. Despite the fact that a complete accounting of all these remote risks has not been provided to me, I still desire to proceed with the exercise program. I acknowledge that I have read this document in its entirety or that it has been read to me if I was unable to read. I consent to the rendition of all services and procedures as explained herein by all program personnel.

Date

Participant's Signature

Witness's Signature

Trainer's Signature

◆ PAR-Q+

PAR-Q+ stands for physical activity readiness questionnaire for everyone, with the plus representing the recent updates⁽³⁴⁾. The original PAR-Q was designed to be used with the Canadian Fitness Testing program. It served as a seven-question assessment of self-reported health information to determine if one should see a physician before beginning or resuming an exercise program. Its primary objective was to identify those individuals at risk for a cardiac event. More recently, a collaboration of international authorities and regional health and fitness organizations sought to reduce barriers for low-to-moderate intensity physical activity participation, with a goal of specifically identifying those persons who might require additional screening prior to becoming more physically active. The collaboration’s overall aim was to create an instrument to simplify physical activity participation clearance and expedite the involvement of physicians, allied health care professionals, and/or qualified exercise professionals. The new PAR-Q+ includes seven questions which serve as “red flag” indicators to identify individuals who require medical clearance before participating in any physical testing or exercise program. Essentially, a “yes” answer to any of the questions dictates medical clearance requirements. This basic screening instrument is practical for large numbers of individuals and requires little time or expertise to implement. It is limited to evaluating risk for low to moderate exercise but should not be used as clearance for vigorous activities. Additionally, the collaborative efforts also generated a second, more expansive tool. This includes questions regarding potential relative contraindications to unrestricted exercise, including those categorized as special populations by specific diagnosis. The electronic Physical Activity Readiness Medical Examination (ePARmed-X+) builds upon the PAR-Q+, with additional questions that direct the participant to a physical activity recommendation and/or a qualified health professional⁽³⁴⁾. The tool addresses all of the common medical conditions found on health risk appraisal documents.



To access the Par-Q+ go to <http://eparmedx.com>

2018 PAR-Q+

The Physical Activity Readiness Questionnaire for Everyone

The health benefits of regular physical activity are clear; more people should engage in physical activity every day of the week. Participating in physical activity is very safe for MOST people. This questionnaire will tell you whether it is necessary for you to seek further advice from your doctor OR a qualified exercise professional before becoming more physically active.

GENERAL HEALTH QUESTIONS

Please read the 7 questions below carefully and answer each one honestly: check YES or NO.	YES	NO
1) Has your doctor ever said that you have a heart condition <input type="checkbox"/> OR high blood pressure <input type="checkbox"/> ?	<input type="checkbox"/>	<input type="checkbox"/>
2) Do you feel pain in your chest at rest, during your daily activities of living, OR when you do physical activity?	<input type="checkbox"/>	<input type="checkbox"/>
3) Do you lose balance because of dizziness OR have you lost consciousness in the last 12 months? <small>Please answer NO if your dizziness was associated with over-breathing (including during vigorous exercise).</small>	<input type="checkbox"/>	<input type="checkbox"/>
4) Have you ever been diagnosed with another chronic medical condition (other than heart disease or high blood pressure)? PLEASE LIST CONDITION(S) HERE: _____	<input type="checkbox"/>	<input type="checkbox"/>
5) Are you currently taking prescribed medications for a chronic medical condition? PLEASE LIST CONDITION(S) AND MEDICATIONS HERE: _____	<input type="checkbox"/>	<input type="checkbox"/>
6) Do you currently have (or have had within the past 12 months) a bone, joint, or soft tissue (muscle, ligament, or tendon) problem that could be made worse by becoming more physically active? Please answer NO if you had a problem in the past, but it <i>does not limit your current ability</i> to be physically active. PLEASE LIST CONDITION(S) HERE: _____	<input type="checkbox"/>	<input type="checkbox"/>
7) Has your doctor ever said that you should only do medically supervised physical activity?	<input type="checkbox"/>	<input type="checkbox"/>

✔ If you answered NO to all of the questions above, you are cleared for physical activity. Please sign the PARTICIPANT DECLARATION. You do not need to complete Pages 2 and 3.

- Start becoming much more physically active – start slowly and build up gradually.
- Follow International Physical Activity Guidelines for your age (www.who.int/dietphysicalactivity/en/).
- You may take part in a health and fitness appraisal.
- If you are over the age of 45 yr and NOT accustomed to regular vigorous to maximal effort exercise, consult a qualified exercise professional before engaging in this intensity of exercise.
- If you have any further questions, contact a qualified exercise professional.

PARTICIPANT DECLARATION
If you are less than the legal age required for consent or require the assent of a care provider, your parent, guardian or care provider must also sign this form.

I, the undersigned, have read, understood to my full satisfaction and completed this questionnaire. I acknowledge that this physical activity clearance is valid for a maximum of 12 months from the date it is completed and becomes invalid if my condition changes. I also acknowledge that the community/fitness centre may retain a copy of this form for records. In these instances, it will maintain the confidentiality of the same, complying with applicable law.

NAME _____ DATE _____

SIGNATURE _____ WITNESS _____

SIGNATURE OF PARENT/GUARDIAN/CARE PROVIDER _____

⚠ If you answered YES to one or more of the questions above, COMPLETE PAGES 2 AND 3.

⚠ Delay becoming more active if:

- ✔ You have a temporary illness such as a cold or fever; it is best to wait until you feel better.
- ✔ You are pregnant - talk to your health care practitioner, your physician, a qualified exercise professional, and/or complete the ePARmed-X+ at www.eparmedx.com before becoming more physically active.
- ✔ Your health changes - answer the questions on Pages 2 and 3 of this document and/or talk to your doctor or a qualified exercise professional before continuing with any physical activity program.

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For the personal trainer, the Par-Q+ offers limited value beyond medical referral identification, and, in many cases, the ePARmed-X+ refers participants to exercise professionals for further evaluation. Investigative instruments including the Health Status Questionnaire, Behavior Questionnaire, comprehensive Health Risk Appraisal, and Medical History Questionnaire can provide additional data to identify individuals at risk of injury from a variety of possible events. Additionally, these screening tools further help identify those clients requiring medical clearance, while also being useful for specific program participation and exercise decision making. The assessment of a person's overall health profile provides coronary risk analysis, disease risk classification, lifestyle evaluation, general physical activity information, and behavior risk stratification. Additionally, the implementation process can help facilitate improved client-trainer rapport and help the client realize important health markers. Of added value, it helps participants become more educated about their current conditions. As a final note, in most court cases, prosecutors ask for documentation of medical and health history that the fitness professional formally employed before providing services, which pertain directly to liability.

◆ Health Status Questionnaire (HSQ)

Traditionally, HSQs are generally split into the following sections: general client information, self-reported health and physical fitness status, current medical information, medical history, and self-reported psychological considerations. Numerous questionnaires are available for pre-exercise screening. These vary by format, number of questions, degree of thoroughness, and complexity level of each question.

The exercise professional should be present and actively assist the client with the completion of the document rather than having them fill it out off-site. Taking the time to administer the questionnaire orally is very effective for collecting the data and serves as yet again another opportunity to connect personally with the client. It helps initiate trust and confidence in the client-trainer relationship, enables the use of probing questions to expand on the questionnaire items, and helps to ensure that the client understands all of the questions so that the responses represent the appropriate and most complete answer regarding the questions' intentions. Likewise, administering the questionnaire verbally provides the opportunity for client education: the trainer can explain the relevance of the questions' subject matter and explain the information's value. Trainers should pay particular attention to key risk areas: family history of cardiovascular and metabolic disease, smoking history, sedentary lifestyle, obesity, high blood pressure, current medications, previous injuries or surgeries, undesirable blood lipid profiles, and impaired glucose tolerance. These areas are most likely associated with heightened disease risk, health complications, and potential cardiovascular events.

The HSQ is divided into sections:

General client information

Current medical information

Self-reported health status

Self-reported physical fitness

Psychological considerations

Key Risk Areas

- Family history of cardiovascular and metabolic disease
- Smoking history
- Sedentary lifestyle
- Obesity
- High blood pressure
- Current medications
- Previous injuries or surgeries
- Undesirable blood lipid profiles
- Impaired glucose tolerance

The highest quality health screening evaluations include a specific section for identifying diagnosed diseases, such as hypertension or diabetes, that warrant medical clearance. They also incorporate a separate section for symptoms that may represent undiagnosed diseases or conditions that require medical evaluation prior to exercise participation. Examples of symptoms that are warning signs include the following: chronic pain, dizziness, breathlessness, heart palpitations, edema, unusual fatigue, constipation, frequent thirst, and/or frequent urination or inability to urinate. Note that the role of an exercise professional is not to diagnose a disease or condition, but to identify those clients who require either medical referral or clearance prior to an exercise program's initiation. In addition, the exercise professional should note the frequency with which a potential client pursues medical exams. Many people do not get annual physical exams and rarely use a physician due to the real and perceived hassles and costs. Thus, a person may potentially have a disease for an extended period of time without knowledge of it, so documenting the date of his or her last examination is relevant, particularly among **geriatric** populations.



DEFINITIONS

Geriatric –

Used as a reference term for older populations or people, especially with regard to their health care or special needs.

HEALTH STATUS QUESTIONNAIRE

SECTION ONE – GENERAL INFORMATION

1. Date: _____
2. Name: _____
3. Mailing Address: _____ Phone (H): _____
 _____ Phone (W): _____
 Email: _____
4. **EI** Personal Physician: _____ Phone: _____
 Physician Address: _____ Fax: _____
5. **EI** Person to contact in case of Emergency: _____ Phone: _____
6. Gender (circle one): Female **RF** Male
7. **RF** Date of Birth: _____
8. Height: _____ Weight: _____
9. Number of hours worked per week: Less than 20 20-40 41-50 over 50
10. **SLA** More than 25% of the time at your job is spent (*circle all that apply*):
 Sitting at desk Lifting loads Standing Walking Driving

HEALTH STATUS QUESTIONNAIRE

SECTION TWO – CURRENT MEDICAL INFORMATION

11. Date of last medical physical exam: _____
12. Circle all medicine taken or prescribed within the last 6 months:
- | | | |
|-------------------------|--|-------------------------|
| Blood thinner <i>MC</i> | Epilepsy medication <i>SEP</i> | Nitroglycerin <i>MC</i> |
| Diabetic <i>MC</i> | Heart rhythm medication <i>MC</i> | Other: _____ |
| Digitalis <i>MC</i> | High blood pressure medication <i>MC</i> | |
| Diuretic <i>MC</i> | Insulin <i>MC</i> | |
13. Please list any orthopedic conditions. Include any injuries in the last six months.
- _____
14. Any of these health symptoms that occur frequently (*two or more times/month*) require medical attention. Please check any that apply.
- | | |
|---------------------------------------|---|
| a. ___ Cough up blood <i>MC</i> | g. ___ Swollen joints <i>MC</i> |
| b. ___ Abdominal pain <i>MC</i> | h. ___ Feel faint <i>MC</i> |
| c. ___ Low-back pain <i>MC</i> | i. ___ Dizziness <i>MC</i> |
| d. ___ Leg pain <i>MC</i> | j. ___ Breathlessness with slight exertion <i>MC</i> |
| e. ___ Arm or shoulder pain <i>MC</i> | k. ___ Palpitation or fast heart beat <i>MC</i> |
| f. ___ Chest pain RF <i>MC</i> | l. ___ Unusual fatigue with normal activity <i>MC</i> |
- Other: _____

SECTION THREE – MEDICAL HISTORY

15. Please circle any of the following for which you have been diagnosed or treated by a physician or health professional:
- | | | |
|--------------------------------|--------------------------|---------------------------------|
| Alcoholism <i>SEP</i> | Diabetes <i>SEP</i> | Kidney problem <i>MC</i> |
| Anemia, sickle cell <i>SEP</i> | Emphysema <i>SEP</i> | Mental illness <i>SEP</i> |
| Anemia, other <i>SEP</i> | Epilepsy <i>SEP</i> | Neck strain <i>SLA</i> |
| Asthma <i>SEP</i> | Eye problems <i>SLA</i> | Obesity <i>RF</i> |
| Back strain <i>SLA</i> | Gout <i>SLA</i> | Phlebitis <i>MC</i> |
| Bleeding trait <i>SEP</i> | Hearing loss <i>SLA</i> | Rheumatoid arthritis <i>SLA</i> |
| Bronchitis, chronic <i>SEP</i> | Heart problems <i>MC</i> | Stress <i>RF</i> |
| Stroke <i>MC</i> | Cancer <i>SEP</i> | High blood pressure <i>SLA</i> |
| Thyroid problem <i>SEP</i> | Cirrhosis <i>MC</i> | HIV <i>SEP</i> |
| Ulcer <i>SEP</i> | Concussion <i>MC</i> | Hypoglycemia <i>SEP</i> |
| Congenital defect <i>SEP</i> | Hyperlipidemia <i>RF</i> | Other: _____ |

HEALTH STATUS QUESTIONNAIRE

SECTION THREE – MEDICAL HISTORY (Continued)

16. Circle any operations that you have had:

Back *SLA* Heart *MC* Kidneys *SLA* Eyes *SLA* Joints *SLA* Neck *SLA*
 Ears *SLA* Hernia *SLA* Lungs *SLA* Other: _____

17. *RF* Circle any of the following who died of heart attack before age 55:

Father Brother Son

18. *RF* Circle any of the following who died of heart attack before age 65:

Mother Sister Daughter

SECTION FOUR – HEALTH-RELATED BEHAVIORS

19. *RF* Do you currently smoke? Yes No

20. *RF* If you are a smoker, indicate the number smoked per day:

Cigarettes: 40 or more 20-39 10-19 1-9
 Cigars or pipes only: 5 or more or any inhaled less than 5

21. Have you ever smoked? Yes No

22. *RF* Do you exercise regularly? Yes No

23. Last physical fitness test: _____

24. How many days a week do you accumulate 30 minutes of moderate activity?

0 1 2 3 4 5 6 7

25. How many days per week do you normally spend at least 20 minutes in vigorous exercise?

0 1 2 3 4 5 6 7

26. What activities do you engage in a least once per week? _____

27. Weight now: _____ One year ago: _____ Age 21: _____

SECTION FIVE – HEALTH-RELATED ATTITUDES

28. These are traits that have been associated with coronary-prone behavior. *Circle the number that corresponds to how you feel toward the following statement:*

I am an impatient, time-conscious, hard-driving individual.

6 = Strongly agree	3 = Slightly disagree
5 = Moderately agree	2 = Moderately disagree
4 = Slightly agree	1 = Strongly disagree

HEALTH STATUS QUESTIONNAIRE

SECTION FIVE – HEALTH-RELATED ATTITUDES (Continued)

29. How often do you experience “negative” stress from each of the following?

	<i>RF</i> Always	<i>RF</i> Usually	<i>RF</i> Frequently	Rarely	Never
Work:	_____	_____	_____	_____	_____
Home or family:	_____	_____	_____	_____	_____
Financial pressure:	_____	_____	_____	_____	_____
Social pressure:	_____	_____	_____	_____	_____
Personal health:	_____	_____	_____	_____	_____

30. List everything not included on this questionnaire that may cause you problems in a fitness test or fitness program.

Action Codes

EI = Emergency Information - must be readily available.

MC = Medical Clearance needed - do not allow exercise without physician’s permission.

SEP = Special Emergency Procedures needed - do not let participant exercise alone; make sure the person’s exercise partner knows what to do in case of an emergency.

RF = Risk Factor of CHD (educational materials and workshops needed).

SLA = Special or Limited Activities may be needed - you may need to include or exclude specific exercises.

Other (not marked) = Personal information that may be helpful for files or research.



◆ Behavior Questionnaire

In a comprehensive screening process, the HSQ should be followed by a Behavior Questionnaire. The Behavior Questionnaire provides details about routine lifestyle habits, common behavior trends, and dietary practices. It can also help identify personal preferences and learned behavior traits. The behavior questionnaire can be very useful for several reasons, including:

1. Identifying obstacles to the program goals and needed improvements in health status.
2. Identifying factors correlating to current health status.
3. Providing the opportunity to educate clients about how their behaviors impact their health.
4. Identifying appropriate behavior management strategies.

Unhealthy behaviors can significantly impact a person's physical and mental condition. If unaccounted for, these behavior can impede program goal attainment, even with a properly constructed and implemented exercise prescription. Of the 168 total hours in a week, exercise professionals usually have 2-3 hours of control over the client's environment and behaviors. The other 165 hours remain at the client's discretion. If the client makes poor eating and drinking decisions, engages in sedentary living, or places him or herself in high stress environments, much of the work accomplished during the personal training sessions will be counteracted by these negative behaviors. This is most relevant if the behaviors exacerbate a current health condition. Individuals with disease, or at risk for diseases – such as diabetes, hypertension, **dyslipidemia**, coronary artery disease (CAD), **metabolic syndrome**, and obesity – must comply with the recommendations for managing their conditions. Of particular concern, are unchecked dietary habits (unhealthy eating and drinking), smoking, high alcohol consumption, and sedentary living, as these are clear markers for increased disease risk.



DEFINITIONS

Dyslipidemia –

A term used to indicate poor blood lipid profile measurements: elevated low-density cholesterol, low levels of high-density cholesterol, elevated total cholesterol levels or sub-optimal cholesterol ratio; it is a risk factor for cardiovascular disease and stroke.

Metabolic syndrome –

Recognized as a cluster of interrelated conditions--high blood pressure, poor glucose management, excess body fat (especially around the waist), systemic inflammation, and abnormal cholesterol levels--that significantly increases one's risk for heart disease, stroke, and diabetes.

BEHAVIOR QUESTIONNAIRE

1. How many servings of fruits and vegetables do you eat per day?

0	1	2	3+
---	---	---	----
2. How many caffeinated drinks (coffee, tea, cocoa, soft drinks) do you drink per day?

0	1-2	3-4	5+
---	-----	-----	----
3. How many glasses (8 ounces) of water do you drink per day?

0-3	4-5	6-7	8+
-----	-----	-----	----
4. How many meals do you consume per day?

1-2	3-4	5-6	7+
-----	-----	-----	----
5. I cook with and eat fats:
 - Nearly always cook/eat high fat foods (fried foods, shortening, butter, creams)
 - Cook/eat mostly high fat
 - Cook/eat both high and low fat foods
 - Cook/eat mostly low fat
 - Cook/eat only low fat
6. My bread/grain eating habit is:
 - Nearly always eat refined (white bread, grains, rolls, crackers, cereal)
 - Eat mostly refined grain products
 - Eat a mixture of refined and whole grain products
 - Eat primarily whole grain products
 - Eat only whole grain products
7. How often do you eat out?
 - I eat out nearly every day
 - I eat out several times each week
 - I eat out a few times each month
 - I seldom or never eat out

BEHAVIOR QUESTIONNAIRE

8. My salty food habit is: (check all that apply)

- I rarely eat salty foods (chips, pickles, soups, added salt)
- Occasionally I eat salty foods
- I regularly eat salty food
- I add salt to the foods I eat

9. During the past 30 days, did you diet to lose weight or to keep from gaining weight?

Yes No

If Yes Explain: _____

10. My high fat snack eating habit is:

- I eat high fat snack foods (potato chips) 3 or more times daily
- I eat high fat snacks once or twice daily
- I eat high fat snacks a few times each week
- I rarely or never eat high fat snacks

11. How often do you eat red meat?

- I eat red meat nearly every day
- I eat red meat several times each week
- I eat red meat a few times each month
- I seldom or never eat red meat

12. How often do you eat cookies, cakes, sweets?

- I eat cookies, cakes, sweets nearly every day
- I eat cookies, cakes, sweets several times each week
- I eat cookies, cakes, sweets a few times each month
- I seldom or never eat cookies, cakes, sweets

13. How many alcoholic beverages do you consume per week?

0-3 4-5 6-7 8+

14. On average, I sleep _____ hours a night.

3-4 5-6 7-8 8+

15. Outside of work, what physical and/or social activities do you engage in?

1. *Identified obstacles to program goals:*

2. *Needed improvements in health status:*

3. *Identified behavioral factors correlating to current health status:*

4. *Appropriate behavior management strategies:*

Compiling the Data



What are we looking for?

Medical Problems/Disease	Signs or Symptoms Indicative of Disease
Characteristics that Increase Health Risks	Lifestyle Factors that Increase Health Risks

The health behavior questionnaire should complement the HSQ and be used in an attempt to correlate findings. For instance, if a client has been diagnosed with hypertension and his or her diet consists of high salt and fatty foods, these current lifestyle habits clearly promote the disease. Therefore, appropriate control strategies are needed to work to prevent negative health impact. Furthermore, if a client's weight measurements over time indicate a propensity for **creeping obesity**, and his or her normal lifestyle habits show a preference for nonphysical activities, these issues should be identified and explained that they are creating barriers to improved health and increasing susceptibility to additional weight gain. Most behavior questionnaires provide supportive evidence for the problems found on the HSQ. Rarely will someone live a very healthy lifestyle and suffer the consequences of diseases prevalent in the western world.



DEFINITIONS

Creeping obesity –

Obesity resulting from incremental weight gain over a period of time; usually attributed to sustained caloric intake coupled with a decrease in physical activity.



Creeping Obesity

One Pound Fat Mass = 3,500 kcals

Daily Caloric Need = 2,200 kcals

Daily Caloric Expenditure = 2,100 kcals

Positive 100 kcal/day

100 kcal/day x 365 days/year = 36,500 kcals per year

36,500 kcals per year + 3,500 kcals per lb of fat =

10.4 lbs of fat per year

CREATE A NEEDS ANALYSIS



Health Needs

- Hypertension
- Pre-diabetes risk
- High body fat

Health Remedies

- Aerobic conditioning/weight loss (daily)
- Total body resistance training (<70% 1RM)
- Caloric control/expenditure (>1,000 kcal/wk)



Fitness Needs

- Flexibility
- Cardiovascular
- Strength imbalances

Fitness Remedies

- ROM activities (dynamic, static)
- Threshold aerobic training (33 ml/kg/min)
- Planned resistance exercises



Behavioral Needs

- High stress
- Poor diet

Health Remedies

- Educational assistance
- Educational assistance

Document findings by *Order of Importance*



DEFINITIONS

Needs analysis –

The identification, organization, and prioritization of physiological needs applicable to improving an individual's health and fitness measurements: a list of what the client needs to improve in his or her health and fitness.

Upon review of the HSQ and behavior questionnaire, personal trainers should attempt to identify and create a **needs analysis** that lists all the health problems and risks associated with the collected client's information. Once a list has been constructed, it should be ranked by order of health risk significance. Immediate and primary risks should be listed first. These risks can cause direct damage to a person's health and include smoking, inflammatory obesity, CVD, metabolic disease, and other major health problems: for example, asthma, leg pain, peripheral edema, chronic low back pain, and orthopedic injuries. The next group of risks should include those factors that compound these conditions or increase their potential adverse effects. Some examples are high fat diet, unmanaged stress, excessive alcohol consumption, poor sleeping habits, low fiber, and high sugar intake. These risks and any important information should be evaluated for relevance and used to correlate related factors. This model will allow for a more complete strategy to address the conditions appropriately. Jointly employed, these two forms can provide relevant details for effective risk stratification and program decision making.

UNHEALTHY LIFESTYLE

- Cigarette smoking
- Physical inactivity
- Diet high in fat

HIGH RISK DISEASES

- Hypertension
- Diabetes
- Hyperlipidemia
- Obesity

NON-MODIFIABLE FACTORS

- Age
- Family history of premature coronary artery disease (CAD)

END ORGAN DAMAGE

- Heart disease
- Stroke
- Peripheral artery disease
- Chronic kidney disease
- Eye sight failure

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