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Eight Essential Principles of Exercise

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Regardless of the type, level, or objectives of the training program you are considering, a number of basic training principles should be integrated to maximize gains, safety, and time efficiency. These principles, summarized below, include: reality, balance, specificity, overload, progression, recovery, variety, and regularity.

Reality: All programs should be goal oriented. Goals must be realistic relative to your genetic potential and somatotype, and quantifiable in terms of pretest values (e.g., pounds, inches, % body fat). Consider either (1) increasing specific components of fitness, if you are deficient or (2) maintaining a given level of fitness, if you are at an acceptable level relative to your genetic potential. For most muscle groups, gains in strength can be expected at a rate of approximately one percent per week over 4 to 6 months for untrained individuals and at much slower rates for the relatively trained. When goal setting, a number of factors affecting gains must be considered and optimized: these include: planned sacrifices (investment of time and effort), sleeping habits, diet/nutrition, and availability of facilities and equipment.

Balance: Your training program should have at least 8 to 12 full range of motion exercises. One exercise should be selected for each of the major muscle groups, so that the entire body, including legs (quadriceps, hamstrings, gastrocnemius/soleus), midsection (abdominals, obliques, spinal erectors), and upper body "pushing" (chest, shoulder, triceps) and "pulling" (latissimus dorsi, rhomboids, trapezius, biceps) musculature are equally developed. Further an equivalent number of exercises and sets should be performed for agonist/antagonists muscle groups. Although all of the muscles are important from a weak link standpoint, larger muscles should be trained before smaller ones through the use of multi-joint versus single joint exercises. From another perspective, training programs should be balanced in terms of maintaining or developing all of the components of fitness.

Specificity: Training programs should be devised to either (1) enhance specific components of fitness or (2) incorporate a spectrum of exercise to enhance all of the components of fitness. These components of fitness include: cardiovascular endurance, body composition, flexibility, coordination/agility, and muscular strength, endurance, and power. From a resistance training perspective, specificity should be considered in terms of load (force), repetitions (duration), cadence (velocity), range of motion, and exercise modality (type). However, generic initiation strength-endurance programs involve "a single set of moderate load, 8-12 repetitions, slow cadence exercise per each muscle group".

Overload: Once the objectives and optimal conditions have been specifically established in terms of the force, velocity, and duration of exercise, overloads must be applied in terms of both volume (product of load x reps x time) and intensity (percent maximal effort) of exercise. From a time efficiency standpoint, intensity overloads are effective; however, more significant long-term gains are realized when both volume and intensity overloads are intermittently and progressively applied. For long-term gains, volume overloads should not exceed 10% per week and intensity overloads should not exceed 1 to 2% per week. In support of the "Hard/Easy Concept", required overloads should occur a minimum of once every 5 to 8 days (1 x/wk) for a given muscle group. Alternate training sessions should be performed at either reduced volumes and/or intensities; these "working rest days" facilitate recovery and maintenance of training effects. Submaximal, non-overload sessions on a regular basis (every 24 hours), are not recommended because they: [1] are not time efficient, [2] fail to provide an adequate overload for maintenance or improvement, and [3] promote men-

tal staleness. Application of "overload training techniques" (e.g. forced reps, forced negatives, negative accentuated, breakdowns) to induce momentary muscular failure (MMF) should be considered less frequently than 1 time per week per exercise. The use of overload training techniques increase the potential of experiencing overtraining, particularly in multiple set regimens.

Progression: For continued and long term improvements in fitness, progressive overloads must be prescribed as fitness level improves. One of the biggest mistakes made with initiation programs is to start out with "too much, too soon"; this is a prescription for overtraining. Slow (optimal) rates of improvement do not induce large alarm responses, and therefore minimize soreness, stiffness, and fatigue. Another reason to start out slowly, is that the extent of the gains that can be expected are inversely related to the rate of gain and initial fitness level. Further, as one approaches their genetic potential, the amount of expected increase is reduced; thus the amount one should attempt to increase must be decreased. From another perspective, optimal sequencing of training activities, within a session, should proceed from warm-up/stretching, technique, speed, strength, endurance, flexibility, and cool down phases, respectively.

Recovery: To optimize the effects of the training stimulus, muscles must be provided with an opportunity to recover metabolically and structurally following each set and training session, respectively. Depending upon the sequence and goals of the program, rest intervals will generally range between 30 seconds to 3 minutes for a given bout of exercise. Shorter intervals are utilized for endurance and body-building programs, while longer intervals are for strength and power development programs. For a given training session, rest/recovery intervals should range between 2 (48 hours) to 3 (72 hours) days, depending upon the degree of overloading from the previous exercise session. Shorter intervals (48 hours) can occur between heavy and light training sessions. Longer non-overload periods (72-96 hours) should be programmed before competition periods to provide the body with the opportunity to experience a greater degree of recovery; this enables the neuromuscular system to "peak" for competitions.

Variety: To minimize the likelihood of staleness and overtraining, the training program should be varied on a regular basis. Although specificity is important, variety within a given program should be achieved through the use of different exercises, sequences, equipment modalities, and repetition and set schedules. The concept of variety also provides an opportunity to change the objectives and goals of the program every 2 to 3 months to maintain motivation and freedom from boredom; these changes are in line with the concept of periodization.

Regularity: The body is broken down by inactivity and developed by use. Exercise provides a stress to which the body can adapt. Without this stress, there is no stimulus to signal positive changes in fitness levels. Participation in regularly scheduled training sessions is the single most important factor determining one's ultimate fitness level. The biggest hurdle is in simply showing up to exercise, so make your schedule accordingly. Each muscle group must be exercised with a minimum of two, and preferably three training sessions per week for maintenance and development, respectively. Adherence is best assured with time efficient programs lasting no more than 1 hour per session; 25 to 35 minute programs are ideal. By following this and the other 7 principles, you will become all you can be. Training on a regular basis is a duty to yourself. Training should not just occur seasonally, but all 52 weeks out of the year, for the rest of your life.