MARCH 2014

TRAINING

MANY KINDS OF HIGH INTENSITY INTERMITTENT TRAINING

Austrian researchers from the University of Graz identified many forms of HIIT that could render different training effects. Some such as fartlek, involve changes of pace during exercise with no break. Others involve intervals with or without full recovery. Short or no recovery is more metabolically taxing, while full recovery allows increased power output. Exercise prescription involving HIIT should consider the physical load during exercise and the desired outcome. (International Journal Sports Physiology Performance, 8: 600-610, 2013)

BEETROOT JUICE IMPROVES CYCLING PERFORMANCE

British researchers from Cardiff University School of Medicine found that a single dose of beetroot juice improved exercise performance at a simulated altitude of 2,500 meters. Beetroot also improved cycling efficiency. The root is an effective performance-enhancing supplement that would be helpful for endurance athletes during practice or competition. (Medicine SCIENCE sports Exercise, 46: 143-150, 2014)

HIGHER VOLUME WORKOUTS

Muscle cells have more than one nucleus. The nuclei must increase in number as muscles increase in size to maintain the cells’ capacity for protein synthesis. Nuclei increase in number by incorporating satellite cells, which are small cells found adjacent to muscle cells that contain a single nucleus. A study from Østfold University College in Norway found that high-volume weight training programs increased satellite cells in lower body that upper body muscles. The take-home message is do high-volume workouts to build lower body muscles. Building upper body muscles probably requires more sets than lower body muscles, so you should structure your program accordingly. (Scandinavian Journal of Medicine & Science Sports, 23: 728-739, 2013)

ENDURANCE TRAINING INCREASES RELEASE OF BLOOD VESSEL REPAIR CHEMICAL

It secretes a chemical called nitric oxide, which is vital to blood flow control. A healthy endothelium is an important marker of metabolic health. The bone marrow releases endothelial progenitor cells (EPC) that repair and maintain healthy blood vessels. A single bout of endurance exercise increases the release of EPC. Irish researchers led by Mark Ross found that endurance-type weight training (high rep with little rest between sets) increased EPC in a manner similar to aerobic exercise. Bodybuilding training contributes to blood vessel health. (Medicine Science Sports Exercise, 46: 16-23, 2014)

INTERVAL TRAINING INCREASES FAT OXIDATION

Recreationally active people improved aerobic and exercise capacity by 15 to 20 percent. Glycogen storage by 28 percent, and mitochondrial enzyme levels by 38 percent in only a few weeks of training. Many people exercise to control body composition, but the effects of interval training on weight control in obese people is not clear. Australian researchers examined the effects of moderate-intensity and high intensity interval training on fat oxidation. Four weeks of either kind interval training increased fat oxidation, which suggests that interval training could be effective for weight control. (SpringerPlus, 5: 532, 2013)

SODIUM BIOCARBONATE IMPROVES THE QUALITY OF BODYBUILDING WORKOUTS

For examples, SB supplements improve performance in the 800-meter run (two laps around a track) by about three seconds in recreationally active people. Sodium bicarbonate enhances the capacity to buffer metabolic acids. A study led by BM Carr and colleagues showed that weight trained men who did a bodybuilding-type workout (four sets of 10-12 repetitions in the squat, leg press and knee extension with short rest intervals) and supplemented with bicarbonate increases high-intensity exercise capacity, it causes diarrhoea, abdominal cramping and nausea in about 50 percent of people. The long-term safety of bicarbonate loading is unknown. (European Journal of Applied Physiology, 113: 743-752, 2013)

PHYCHOLOGICAL STRESS DELAYS RECOVERY FROM STRENUOUS EXERCISE

Matthew Stults-Kolehmainen from the Yale School of Medicine found that students who are under greater stress took longer to recover from a bout of intense weight training than students under less stress. Stress reduced energy and promoted fatigue and soreness. Stress levels should be incorporated into planning for training recovery time. (Journal Strength Conditioning Research, published online December 2013)

EXERCISE BETTER THAN MASSAGE FOR TEMPORARILY RELIEVING MUSCLE SORENESS

An interesting study by Lars Anderson and colleagues found that using electric bands was superior to massage for relieving muscle soreness. While both modalities were effective, the effects lasted only one hour or less. Researchers created muscle soreness with eccentric exercise (lengthening contractions) of the trapezius muscle. Active exercise temporarily reduces muscle soreness better than massage, but the effects last only 20 to 60 minutes. (Journal Strength Conditioning Research, 27: 3352-3359, 2013)

HEALTH

HIGH-INTENSITY INTERVAL TRAINING GOOD FOR HEART PATIENTS, TOO

Many physicians are hesitant to allow their patients, particularly those with cardiovascular disease, to practice HIIT. They are concerned about the possibility of abnormal heart rhythms and musculoskeletal injury. A meta-analysis by researchers from the University of Queensland in Brisbane, Australia concluded that patients suffering from coronary artery disease, heart failure, hypertension, metabolic syndrome and obesity benefited more from HIIT than from prolonged, moderate-intensity exercise. Patients’ gains were nearly 200 percent greater when practising high intensity exercise. (British Journal Sports Medicine, published online October 21, 2013)

WHY YOU NEED SLEEP

People who exercise report fewer sleep problems. Contrary to popular belief, it doesn’t seem to matter if you exercise close to bedtime. Sleep and exercise feed off each other: rested people have better exercise capacity and fit people sleep better. (ACSM’s Health & Fitness Journal, 17(5): 5-8, 2013)

BINGE DRINKING IS A BIG PROBLEM ON CAMPUS

Binge drinking is defined as consuming five or more drinks at a sitting for a man or four or more drinks for a woman. The problem is particularly acute

CPAP BLOOD PRESSURE CONTROL

More than 70 percent of people with uncontrolled high blood pressure (resistant hypertension) have sleep apnea. A Spanish study found that treating these patients with CPAP (continuous positive airway pressure) resulted improvements in 24-hour diastolic blood pressure and night time blood pressure control. CPAP is an important tool for people with sleep apnea. Bodybuilders are prone to sleep apnea because they have muscular neck muscles- an important risk factor for the disease. (Journal American Medical Association, 310:2407-2415, 2013)