

The FreeMotion Fitness™ Ultimate Workout: MC^2 ™

*Muscular, Cardiovascular, and Caloric
Training*





Maximizing Exercise Effectiveness and Efficiency

MC² utilizes the following principles to help exercisers get the greatest benefits during their workout while making the most efficient use of their training time:

- *Incline training, which increases caloric expenditure and fat utilization.*
- *Free-motion resistance training exercises, which activate more muscle tissue and develop greater functional fitness as compared to traditional resistance machines.*
- *iTonic Whole-Body Vibration to enhance recovery between exercises while enhancing flexibility and accelerating muscular fitness adaptations.*

Circuit Training 101

Circuit training was originally developed to enable exercisers to complete more work in less time. Rather than setting up “camp” at a free weight exercise station (i.e. bench press) for 5-10 minutes to complete three sets before moving on to the next exercise, circuit training was introduced where exercisers could quickly move from one station to the next. Additionally, aerobic exercises are placed in between resistance exercises to enhance cardiovascular fitness. Overall, the concept of circuit training has been shown to provide sufficient overload to enhance muscular strength and endurance and, if aerobic exercises are also included, cardiovascular benefits are also realized.

The key to successful circuit training is the sequence in which exercises are placed. To allow recovery of specific muscle groups, exercises are sequenced so that following one exercise, several other exercises are performed which task different muscle groups. In this manner, rest time for one muscle group is used as exercise time for other groups and time is used much more efficiently. Selectorized exercise machines have conventionally been the preferred mode of circuit training due to the ease in changing loads allowing for quick transitions between exercises.

Circuit training is generally the preferred method of training for the average exerciser. Personal trainers and exercise facilities who can offer the most effective and efficient circuit training methodologies will certainly have a great impact on the health and fitness of their clients and enhance their financial benefits at the same time.

Ultimate Training

Through the innovation, technology, and research support of FreeMotion Fitness®, circuit training has taken on a new life. Through the use of whole-body vibration, incline training, and free-motion exercises, **MC²** was born. **MC²** includes exercise sequences designed to maximize muscle activation, caloric expenditure, fat utilization, and recovery. Through the use of the iTonic whole-body vibration platform, the Incline Trainer, and FreeMotion selectorized stations, training effectiveness is significantly enhanced.

The first unique aspect of **MC²** is the inclusion of incline training as the chosen aerobic exercise. Incline walking (at inclines between 18-30%) has been shown to enhance fat utilization by as much as three times that of running on level ground. In addition, heart rate during incline walking can reach or exceed heart rates measured while running with no incline, meaning that cardiovascular benefits are the same. This is all a result of enhanced muscle activity due to the incline while speed of movement is kept relatively slow. The increased muscle activity results in greater caloric expenditure during walking but the slower speed allows the oxidative energy system (relying primarily on fat) to provide sufficient energy. The enhanced muscle activity also means that the incline exercise also serves as an additional resistance exercise for the lower body during the circuit session.

The use of free-motion resistance exercises also increases the overall effectiveness of the resistance portions of the circuit session. Because real-life activities involve movements in all three planes of motion, fixed-resistance exercises fail to provide an *optimal* stimulus for the transfer of fitness to functional lifestyle enhancements. Additionally, free-motion exercises have been shown to enhance muscle activity among synergistic muscle groups as compared to fixed-resistance machines. The added muscle activity results in greater fitness adaptations, enhanced caloric expenditure, and increased coordination of muscle activity during complex movements.

MC² also includes the use of whole-body vibration interspersed throughout the session. By incorporating the iTonic platform at specific times, the following benefits are achieved:

- Increased muscle activation
- Increased blood flow and circulation, resulting in better recovery
- Increased availability of fat for energy

Whole-body vibration has been shown to enhance muscle fitness, flexibility, blood flow to muscles, and to increase force output during resistance exercises performed immediately following a set of vibration exercise. This vibration station is used to increase blood flow to muscle groups that have been stressed which speeds up the clearance of negative products of energy production such as lactic acid and results in delivery of nutrients to re-stock muscle stores before the next set. Stretching exercises are performed on the platform followed by an exercise designed to prepare the next muscle group for an upcoming resistance movement. This sequence results in both enhanced recovery for the fatigued muscle groups and increased performance of the next exercise, while simultaneously increasing flexibility.

Weight loss is a premier focus of most exercise programs. Published research has shown that whole-body vibration results in greater amounts of fat being mobilized for energy production. By mobilizing fat during an aerobic circuit workout, especially when incline training is utilized, exercisers will burn more fat calories during **MC²** than any other circuit-style program. The result is an advance, unprecedented training experience for exercisers seeking improvements in muscular fitness, flexibility, cardiovascular improvements, and weight-loss.

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Ultimate Circuit

MC² includes the following exercise stations from the FreeMotion Selectorized line:

Exercise	Station	Time (seconds)
Incline Walk/Run	Incline Trainer	120
Lunge Pull	Dual Cable Cross	60
Squat High Pull	Lift	60
Hamstring stretch	iTonic	60
Incline Walk/Run	Incline Trainer	120
Chest Press	Chest	60
Row	Row	60
Reverse Lunge	iTonic	60
Incline Walk/Run	Incline Trainer	60
Bicep Curls	Bicep	60
Step-ups	Step	60
Sumo Stretch	iTonic	30
Dips	iTonic	30
Tricep Extension	Tricep	60
Incline Walk/Run	Incline Trainer	60
Hamstring curls	Hamstring	60
Hip flexion	Quad	60
Hamstring stretch	iTonic	60
Calf extension	Calf	60
Incline Walk/Run	Incline Trainer	120
Lat pulldown	Lat	60
Pike pushup	iTonic	60
Shoulder press	Shoulder	60
Incline Walk/Run	Incline Trainer	120
Ab crunch	Abdominal	60
Squat	iTonic	60
Squat	Squat	60

Training Methodology

MC² was developed through a process of metabolic testing and EMG testing. This testing, conducted by Jeremy Strom, Director of Education, Lisa Renee Tuminnello, Director of Strategic Business Development, Mike Barnes, FreeMotion Fitness special consultant, and Dr. Matt Rhea, an exercise physiologist and FreeMotion Fitness' Scientific Advisor, involved strategic planning of exercise sequences and protocols followed by metabolic measurements and analysis.

The sequencing of exercise was established based on the goal to complete a total-body workout in an efficient time. To accomplish, the team considered the muscular and metabolic demands of the exercises in relation to the other exercises. Recovery times were strategically placed throughout the workout, performed on the iTonic, to enable quick recovery and facilitate the maintenance of high-intense training throughout the entire circuit.

One circuit during each session will result in significant improvements in all fitness components with additional gains achieved if subsequent sets are added or performed. The intensity of each exercise is self-selected; however, moderate resistance during each resistance-training exercise should be performed for maximum results. Between 10 and 15 repetitions should be completed at each station.

Maximizing caloric expenditure was also a primary goal of the workout. Data collection showed that two minute segments on the incline trainer, separated by no more than three other exercises, stimulated aerobic metabolism throughout the entire session. If too many resistance exercises were performed before returning to the incline trainer, metabolic activity slowed dramatically. It was also determined that the intensity of work during the two minute incline segments should be kept at a high level to ensure that aerobic metabolism remained high during the resistance exercises.

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Research

Testing identified impressive caloric expenditure and overall demands of MC^2 . In 30 minutes, a workout burning between 600 and 900 calories while overloading all major muscle groups in the human body can be completed. Heart rate values during the circuit ranged between 80-100% of age-predicted maximum, levels well within the American College of Sports Medicine prescription guidelines for developing aerobic fitness.

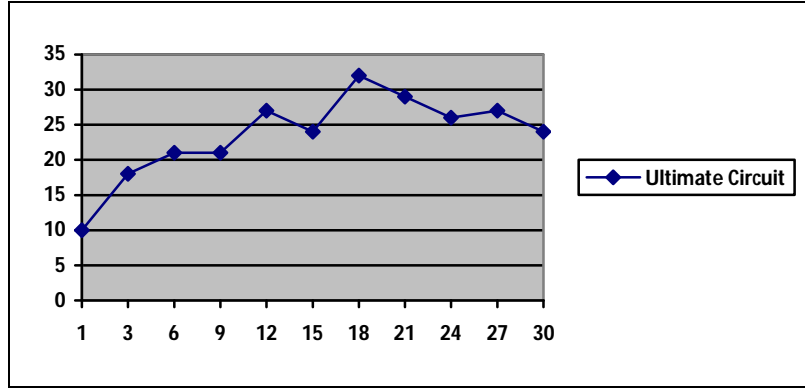


Table. Sample caloric expenditure (kcal/minute) during Ultimate Circuit

An additional comparison was made between MC^2 and conventional circuit resistance training. Caloric measurements identified a significant difference between the two in terms of metabolic demands in favor of MC^2 . While the conventional circuit training routine may stress the muscular system, it cannot reach the level of caloric expenditure comparable to MC^2 .

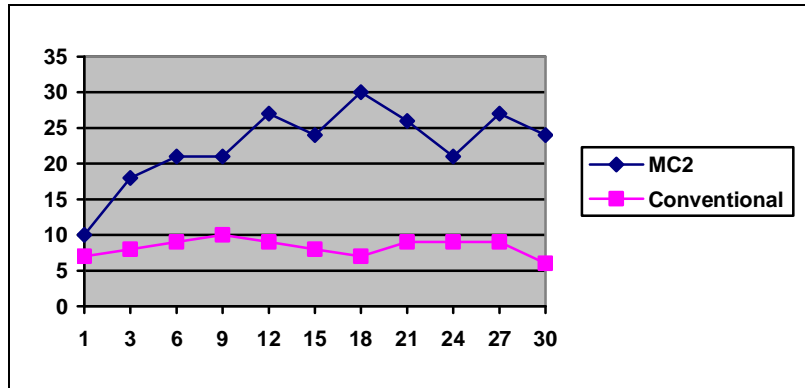


Table. Caloric demands (kcal/minute) of conventional circuit training versus MC^2

The Ultimate Training Experience

MC^2 , combined with advanced training programming, will result in an unprecedented training experience. Through the development of advanced training pieces, utilizing the combination of whole-body vibration, incline training, and free-motion resistance exercises, exercisers will see fitness results that have been previously unachievable.