



Cross-Reference Testing System

X-RTS Software Products and Testing Devices
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“The X-RTS Four-Wheeled Cart has application as a training or rehabilitation device as well as a post-offer testing device, with user-selected workloads providing total body exercise for all three cardinal planes in both directions while the user assumes an upright and functional posture and experiences almost no impact to the body.”

OK. So we don't know how to write a snappy slogan. But you can't describe the X-RTS Four-Wheeled Cart in 25 words or less.

Unique Combination of Exercise and Training Potential

This device provides resistance that is completely under the control of the user—and can be changed in seconds without adding or removing weight from the deck of the Cart. **For most purposes, adding weight to the deck is unnecessary.**

One of the most unique features of the workloads encountered on the X-RTS Four-Wheeled Cart is the fact that, without lifting a pound and while moving no faster than a mile an hour, it is possible to elicit the same heart rate and blood pressure response that one would experience while running at top speed. **This means that the Cart can provide extremely intense workouts—with almost no impact.** Because of this unique feature, it is possible to workout heavily on consecutive days without soreness.

The Cart can provide the same exercise possibilities as a large collection of the standard weight machines. Furthermore, the work accomplished on this device more accurately reflects the kind

of multi-axial workloads found in the real world. Unlike resistance weight training machines, the exercises performed on the Cart do not channel the user into uni-planar movement patterns. Therefore, exercise on the Cart more closely resembles the kind of activity found in the workplace.

The “total body exercise” concept is accomplished by the user changing body position and/or adjusting the positions of the hands during exercise and/or changing the direction of movement. These strategies, combined with the high maneuverability of the device, made possible by the rear casters, allow for the user to experience a physical challenge in all three planes of movement—in both directions.

Exercise on the Cart is performed in an upright and functional posture. Since the work we do in real life involves the entire body, the total body involvement in pushing and pulling will better prepare the athlete as well as the injured individual for returning to play or returning to work.

Convenience of Use During Exercise or Training Sessions—Weight Not Required

Unless the Cart is being used for high-speed drills or is being used by extremely strong, elite athletes, it is unnecessary to add weight to the brake housing or the deck. It is estimated that maximum adjustments on the brakes will result in workloads well in excess of 200 pounds. At the heaviest resistance levels, the friction on the brake drum is so high that the wheels will not turn unless they are held into contact with the floor by applying weight on the rod found on top of the brake housing. A similar rod is found on the deck of the Cart. Depending on the brand of weights, the rods will accommodate up to 10 25-pound barbell weights. **In all such cases, the same amount of weight must be applied to the rear weight retaining pin to act as a counterweight. An imbalance between the weights of the front and back halves of the device could result in an accident.** During high-speed drills, even when the brake setting does not require weight to be added to the brake housing, it may be necessary to add weight to the deck of the Cart to prevent the force applied by the user from lifting the back wheels from the floor. The same amount of weight required to prevent the user from lifting the back wheels must be applied to the rod on top of the brake housing.

List of Uses and Exercise Possibilities

To receive maximum benefit during the use of the Cart, particularly during low- and moderate-speed use, users can push and pull the device slowly while moving in either direction. **Slow movements (such as slow biceps flexion or triceps extension) place less stress on the body part that is in use and maximize the strength-building potential of the movement.** With a minimal amount of practice, users can incorporate these coordinated types of movements into their exercise regimen. **The video of the Cart in use shows a first-time user who had, literally, less than 60 seconds of instruction prior to the filming of the video.** The list below is list of some of the basic approaches as well as some specific suggestions for exercises that can be what can be done on this device.

Two Basic Training Approaches

1. High velocity training to enhance foot speed and, therefore, acceleration and power during movement in any direction.
2. Low velocity training to simultaneously enhance cardiovascular capacity and musculoskeletal strength and endurance.

General Categories of Exercise

1. Pushing or pulling with either one or both hands.
2. Trunk stabilization exercise with the user tethered to the Cart (pulling or dragging).
3. Combined upper extremity, torso and lower extremity exercise with the user pulling the Cart by the pulling chain.
4. Bilateral pushing, hands pronated on the pushing bar or hand neutral on the uprights.
5. Unilateral pushing, feet in line with the length of the Cart, feet at 90 degrees to length of Cart, or feet at 135 degrees to length of Cart.
6. Bilateral pulling, hands pronated or supinated, with the pulling bar attached to the uprights.
7. Bilateral pulling, hands pronated or supinated, with the pulling bar attached to the deck (increases challenge to the upper traps).
8. Bilateral pulling with isometric contraction of the biceps (results in shoulder extension and/or retraction), with the pulling bar attached to the deck or the uprights.
9. Unilateral pulling with feet in line with deck of Cart, at 135 degrees to length of Cart or at 90 degrees to length of Cart.
10. Upright or crouched posture, feet even or one foot forward, hand-over-hand pulling of the device by the pulling chain (affixed to middle eye hook on deck).
12. User wearing a torso harness or waist belt, tethered to the Cart, either pulling or dragging the device.

Physical Description of the Device

The deck, brake housing, rear uprights, push bar and pull bar are constructed of stainless steel. The uprights contain multiple locations at which the push bar can be affixed, allowing the bar to be raised or lowered to accommodate the height of the user. The rods on the brake housing and deck are 1" diameter cold rolled steel. These rods are provided for the placement of standard barbell weights (purpose described later in this document). The front tires are foam-filled, industrial grade, and puncture-proof, connected by an cold-rolled steel axle. The wall of the 8" diameter brake drum is 1/4" steel. **The rolling surface of the rear casters is made of industrial grade nylon, suitable for use on rugs, wooden floors and smooth concrete surfaces.**

The pulling bar can be attached to the uprights of the device or to the 3/8" steel eye hooks at the rear of the deck, thereby challenging the upper extremities and torso from two different angles. The middle eye hook at the rear of the Cart serves two purposes. This attachment point can be used the tether a user to the device with a torso harness. The middle eye hook can also be used in conjunction with hand-over-hand pulling or unilateral upper extremity exercise. A 15' length of chromed chain is provided for these purposes. The heavy duty snap clips on the pulling bar and the length of chain allow for the user to adjust the distance between the body and the Cart.

About the Braking System—Built-In Safety Feature

The X-RTS Cart provides a smooth, continuous resistance. The workloads are controlled by adjusting the tension on one or more of the brake straps. Tension can be either reduced or completely released by pinching one or both of the clips on either end of the brake strap to loosen the tension on the brake. The nature of the workload prevents substantial acceleration from being developed by the user. **As a result, the Cart has a built in safety feature because movement of the device ceases almost immediately at high workloads when the use's hands are removed from the device.** Furthermore, the resistance which permits only minimal acceleration challenges the proprioceptive and neural control mechanisms that are responsible for enhancing foot speed.

Guarantee and Life and Care of the Device

The Cart and all components of the device are guaranteed to be free of material defects upon arrival to the customer. The deck, brake drum, uprights and pushing and pulling bar are guaranteed for five years, assuming normal wear and tear. Care and maintenance of the front tires and rear casters are the responsibility of the customer. With normal use, these tires should last for several years, although we can not give a precise estimate of their useful life. Even with heavy high-speed use, the nylon braking straps should have a useful life time of 1-3 years. The strapping can be purchased from McMaster Carr (mcmaster.com) for \$10 per 35' roll. The D-rings, strapping and spring clip, found on each end of each brake, are guaranteed for five years. Customers are responsible for replacement of the braking springs. The dimensions of the

springs are 3/4" x 3-1/8" x .105" (19.050 x 79.375 x 2.667 mm). They are widely available at hardware stores, costing approximately \$2.00 apiece. The springs can be purchased directly from McMaster Carr by calling (404) 629-6500. There are a number of brands of widely-available stainless steel cleaners that are appropriate for cleaning the surfaces of the Cart. Products such as 409, or even ordinary glass cleaner can be used to clean the surface of this device. Apply and remove cleaners with a soft cloth. It is possible that some liquids can cause superficial staining of the surface of the Cart. Scotch pads, or preferably, a similar abrasive pad (commonly found in hardware stores) can be used to remove such stains. When using such pads, use the minimum amount of force to remove stains to maintain the uniformity of the appearance of the surface.

Proprietary Claim, Safety Precautions for Users

X-RTS is a registered trademark. The X-RTS Four-Wheeled Cart was patented June 11, 2000. Use of our trademark by any person who has not purchased this device is prohibited. This device must be used under the direction of a professional healthcare provider or a fitness professional. Users of the device can exercise or train independently if the healthcare provider or fitness professional has provided the user with an orientation to the use of the Cart and is of the professional opinion that the user understands how to safely use the Cart. As with any other exercise or training device, users must be properly screened to ensure that there are no medical or therapeutic contraindications for the use of the X-RTS Four-Wheeled Cart. Particular care should be given to screening users for the presence of cardiovascular disease such as congestive heart failure. High resistance workloads are not appropriate for all users and, in fact, may be completely unnecessary in many instances. The health and physical condition of the user and the goals for any exercise or rehabilitation program should be considered when using this, or any other, piece of exercise equipment. Healthcare and fitness professionals are ultimately responsible for the safe use of this or any other piece of equipment.