

COOL SHIRT® Personal Cooling Systems

Shafer Enterprises LLC

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FOOTBALL COOL SHIRT®



Since 1987, Shafer Enterprises' **COOL SHIRT®** has been the world leader in personal cooling systems. Our mission has been to create innovative products that help people manage body heat in extreme environments. After more than 20 years experience in the medical field and extensive research on cooling the human body, we have developed systems specifically for surgeons, racecar drivers, football players, fire/emergency services/hazmat and industrial workers.

Utilizing NASA study guidelines, our *temperature-controlled* cooling systems utilize ice and water circulated through a variety of cooling garments, including heavy-duty lightweight shirts and reusable/disposable ponchos. **COOL SHIRT®** Systems reducing heat stress, heat fatigue and exhaustion, all while increasing safety, productivity and reducing heat-related illnesses.

Numerous studies have proven that covering 30-40% of the body with 45-55 degrees F cool water is the most effective way to cool the body, relieve heat stress and help maintain a safe core body temperature. Our temperature-controlled systems developed for football are available in single, dual and multi-user units and can be used ongoing where applicable, for pre-cooling prior to training or game play or as a remote cooling station for periodic cool downs. All systems can be powered by 110V or 12V battery.

More information on all systems can be viewed on-line at

www.coolshirt.net



How does the **FOOTBALL COOL SHIRT®** *work?*

- **COOL SHIRT®** covers 30 to 40% of the skin surface
- 40 feet of tubing is stitched onto the front and back
- Temperature-controlled cool water....45 to 60 degrees is circulated through the shirt

What does **COOL SHIRT®** *deliver?*

Used for pre-cooling before training & practice situations, for half-time and 4th quarter cool down, *independent testing* has proven **COOL SHIRT®** provides:

- ***Significant*** reduction in sweat rate
- ***Significant*** reduction in dehydration
- ***Significant*** reduction in cramping attributed to dehydration and electrolyte loss

The **FOOTBALL COOL SHIRT®** can be used by the *entire team* or to *target specific players* who consistently have heat stress issues.

FOOTBALL **COOL SHIRT**® Study

TEST RESULTS: Testing Session #1



*A Independent Study was conducted at a major university in Sept '04 on the effectiveness of **COOL SHIRT**® for maintaining core body temperature and accelerating cool-down.*

The subject was a 20 year-old marathon runner, 6' tall, 190 lbs in excellent health.

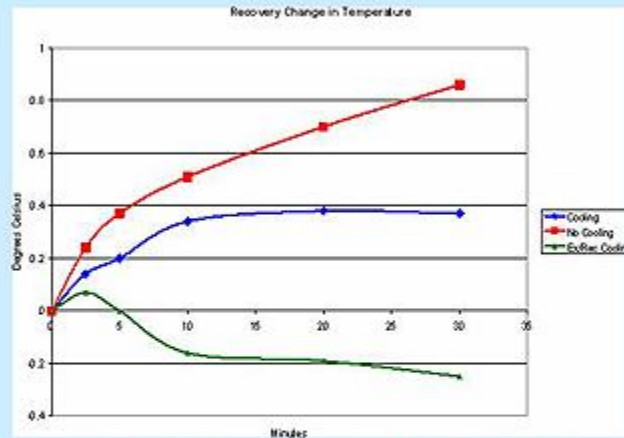
*Fully encapsulated in a Tyvek suit and a **COOL SHIRT**™*

*How was the **COOL SHIRT**™ tested?*

- Subject ran 6.5 mph on treadmill*
- 14 minutes*
- 30 minutes sitting in a resting position*
- Room temperature was **86 degrees***
- Room humidity was **45%***
- Heat Index $85 + 15 = 100 = \text{Category 2}$*

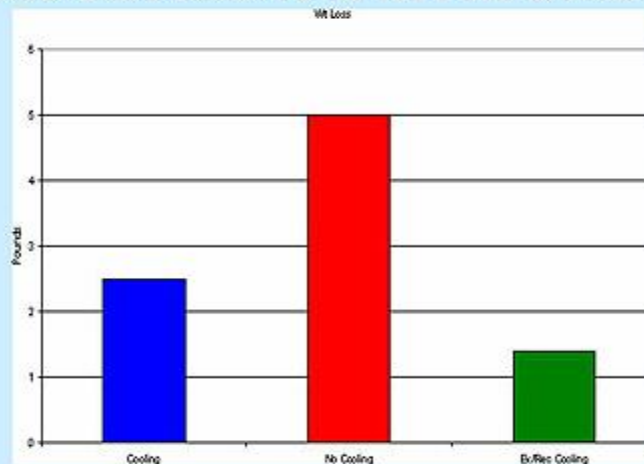
*No other cooling method except the **COOL SHIRT**™*

CORE TEMPERATURE OBSERVATIONS DURING RECOVERY



- Subject stopped running and rested 30 minutes
Heat Index = 100
 - Used loose fitting XL **COOL SHIRT™**
- Red = No cooling** **Blue = Cooling once resting**
Green = constant cooling, start to finish

WEIGHT DIFFERENTIAL AFTER EACH TRIAL



- During the trial with no **COOL SHIRT™** used (*red bar on graph*), weight loss was 5.0 pounds or 2.6%
- **COOL SHIRT™** used *only* while the subject was at rest (*blue bar on graph*), weight loss was 2.5 pounds or 1.3%
- **COOL SHIRT™** used during the treadmill exercise *and* while at rest (*green bar on graph*), weight loss was 1.4 pounds or .7%

***SEVERAL IMPORTANT CONCLUSIONS
ARE EVIDENT FROM THE TRIAL RESULTS***

Simply put, the GOOL SHIRT™

- ***Speeds recovery times*** significantly for individuals who are experiencing heat stress
- ***Reduces the body's need to sweat*** during periods of increased physical exertion by helping maintain a cooler, safer core body temperature
- ***Reduces weight loss and dehydration*** experienced during periods of increased physical exertion by reducing the body's need to sweat

FOOTBALL GOOL SHIRT® Study TEST RESULTS: Testing Session #2

GOOL SHIRT® MENTAL AND PHYSICAL PERFORMANCE TESTING

SUBJECT: 20 year-old college athlete, 185 lbs, excellent health

TEMPERATURE: 90 Degrees F

HUMIDITY: 52%

CLOTHING: Three layer driver suit, leather walking shoes

HEAT INDEX: Category 3 – Heat exhaustion likely, heat stroke possible

EXERCISING AND TESTING:

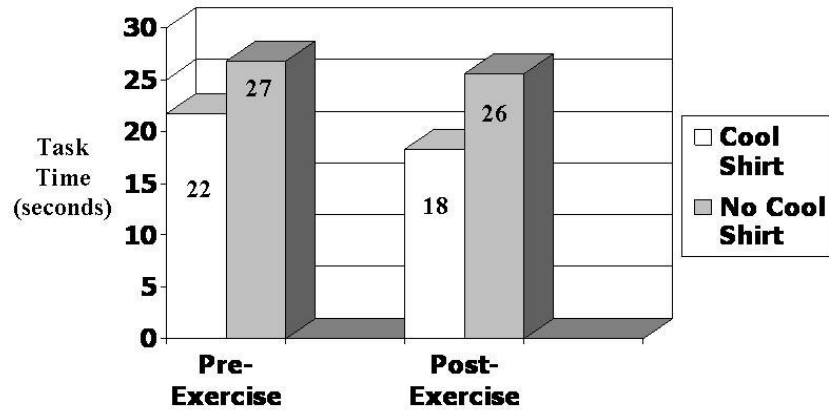
15 minutes sitting in resting position wearing driver suit

30 minute incline arm and leg climbing machine

MENTAL TEST #1: administered in last minute of the first 15 minute period

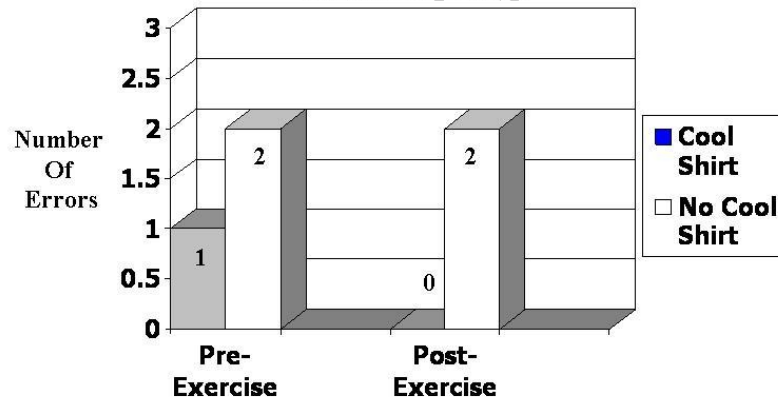
MENTAL TEST #2: administered in the last minute of the 30 minute exercise

MENTAL PERFORMANCE TASK TIME



***Faster Decision Making
Using COOL SHIRT®.***

MENTAL PERFORMANCE ERRORS



***200% Fewer Mental Errors
Using COOL SHIRT®.***

Important information on blood circulation

NORMAL *Blood Circulation*

Average human blood capacity is **5.6 liters** or **6 quarts**.

Three circulation cycles per minute

For normal heat loss, ¼ liter of blood is sent to your skin surface per minute for cooling

BLOOD CIRCULATION for *HEAT LOSS*

When heavy perspiration occurs, **6 to 8 liters of blood flow to your skin's surface per minute** for evaporation. This is up to **one-half** of your body's normal blood supply.

★ *Now your body's brain, muscles, & vital organs are working on only **ONE-HALF** of what is normally required.*



FOOTBALL COOL SHIRT®

Here's what some of our customers are saying about the

FOOTBALL COOL SHIRT® System:

- “Our players gave the system rave reviews and I was amazed at the ease of operation. I am confident that this system will help keep our guys cool and at a higher performance level during the 4th quarter. Thanks for a great product! We will win games with Cool Shirt.”
Mike Goforth, Head Athletic Trainer, Virginia Tech
- “The COOL SHIRT is a great tool. You see immediate results. I have received tremendous results using the system after pre-game warm-ups, at half time and for 7 to 10 minutes after the game ends. COOL SHIRT reduces body temperature, enhances and speeds recovery, eliminated cramping and reduces stress brought on by heat and humidity.” *Jeff Quinn / ATC – Head Athletic Trainer, Mary Pearsons High School*
- “We decided to use the system for pre-cooling and half-time cool downs and it worked excellent. We targeted 5 players that habitually cramped up, especially towards the games end. All 5 experienced NO cramping whatsoever and had their best 4th quarter thus far this season. Thank you COOL SHIRT.” *Head Athletic Trainer-GA*

COOL SHIRT®

FREQUENTLY ASKED QUESTIONS

How does the FOOTBALL COOL SHIRT® and Resposable Poncho work?

- **COOL SHIRT®** contains more than 45 feet of medical grade capillary tubing securely stitched on the front and back of the shirt. The reusable, disposable poncho contains a network of channels that the temperature-controlled cooled water flows through. They are both connected to a compact cooling unit via insulated hose with quick, dry disconnects. The cooling unit contains ice, water and an internal pump that supplies cool water to the **COOL SHIRT®** as it covers up to 40% of the body.

How long will it keep the user cool?

- It depends on what type of ice is used (block, crushed or cubed). All of the systems will cool for a *longer* period of time if BLOCK ice is used rather than crushed or cubed ice. Using block ice, the systems will cool for about 6-7 hours before requiring additional ice.

How does the system operate?

- The system connects to any standard outlet via a UL-approved 110V Adaptor or can be connected to a 12V battery .

How do you assemble the system for use?

- Attach the hoses to the cooling unit and the shirt to the hoses. Be sure the quick, dry disconnect fittings are fully seated by listening for an audible “click”. Add a gallon of water to the cooling unit. Add ice to the top of the cooler. The **COOL SHIRT®** system is now ready for use. The system connects to any standard outlet via a UL-approved 110V Adaptor or to a 12V battery.

How do you adjust the temperature of the shirt or poncho?

- The *Temperature Controller* is located on the insulated hose near the shirt/poncho. Simply adjust the roller on the controller to control flow and temperature on the shirt/poncho.

How can I tell that the shirt is working?

- The shirt is designed to *cool* the user, not make them *cold*. The system is designed to maintain a *comfortable* temperature. As it is worn, the user can become very comfortable with the shirt or poncho and become unaware of the cooling it is actually providing. If unsure, the easiest way to see that it is working properly is to shut the system off. In less than two minutes, you will have the answer.

FREQUENTLY ASKED QUESTIONS (CONT.)

What are the maintenance requirements?

COOL SHIRT®:

- The **COOL SHIRT®** can be hand or machine-washed and hung to quickly drip-dry or can be dried in a dryer using a laundry bag.

Resposable Poncho:

- The *Resposable Poncho* can be washed in the same manner and hung to drip dry. It can withstand several washings before requiring replacement. However, it is not necessary to wash the poncho unless desired.

Cooling Unit and Hoses:

- **Interior:** Once per month, pour one pint Isopropyl Alcohol (rubbing alcohol) in the cooling unit *with the ice and water while the unit is being used*. This will keep the pump, hoses and shirt lines clear of the buildup that occurs naturally in water-circulation systems. Wipe out cooling unit after each use.
- **Exterior:** When deemed necessary, wipe cooling unit, cart and hoses down with warm soapy water (preferably antibacterial). Maintain the outside of these parts just as you would maintain any other equipment used in your environment.

How long does the cooling last?

- This depends on the size of users, the number of users connected to the system and the temperature settings. Expect many hours of use before adding ice.

How are the COOL SHIRT® and the Resposable Poncho stored?

- Hang the shirt or poncho on a large hanger. Coil the insulated hoses and store in the cooling unit or lay flat. Do not hang the hoses as this may damage them.

Is the system electrically safe?

- Yes. The pump is double-insulated and the UL-approved 110 adaptor prevents electrical overload. See specifications on adaptor.

What is the warranty?

- Full one year warranty from the date of purchase covering any defects in materials and workmanship.

BENEFITS AND FEATURES OF **Football COOL SHIRT®**

BENEFITS

SHIRT AND RESPONSABLE PONCHO

- **COOL SHIRT®** and the Resposable Poncho keeps users safer, feeling refreshed and more alert by helping maintain a safe core body temperature.
- The heavy-duty yet lightweight **COOL SHIRT®** and Poncho can be worn under uniforms, HazMat suits, coveralls and all other outer wear.
- Ongoing cooling can last as long as connected to help prevent heat exhaustion.
- The **COOL SHIRT®** Systems (single user and multi-user) can also be used as remote cooling stations for on-demand cooling as needed. Single units can cool up to two users at once while the Multi-Systems can cool up to 6 users at once. Both make excellent remote cooling stations.
- The user can stand or sit while using the **COOL SHIRT®** or Poncho.

COOLING UNIT

- The **COOL SHIRT®** Cooling Unit is user friendly ...just add ice and water, connect the shirt/poncho and turn it on.
- Adjustable temperature controller hoses allow users to adjust the shirt/poncho temperature to their personal comfort level
- Quick-release, dry disconnects allow freedom of movement

THE COOL SHIRT® SYSTEM Warranty

- Full one year warranty from the date of purchase covering any defects in materials and workmanship.

FEATURES

SHIRT AND RESPONSABLE PONCHO

- Adjustable temperature controls are located on the insulated hose for easy access
- Lightweight durable shirt weighs only 10 ounces when full of water
- Continuous cooling while connected
- Standard hose lengths are 8', 10' and 12'
- Shirts come in many sizes to accommodate all users – S, M, L, XL, XXL, XXXL. Smaller and larger sizes available upon request.
- Responsible Ponchos are one-size-fits-all.
- Two shirts can connect to one cooling unit with a Y-hose.
- Up to six shirts can connect simultaneously to the Multi-Person System
- Quick-release, dry disconnects allow freedom of movement
- Easy maintenance shirt, just wash occasionally and drip dry. Poncho can be washed or wiped down with a mild soap/disinfectant solution.

COOLING UNIT

- Complete user instructions are located on the lid for easy reference
- Quality construction that will provide years of trouble-free use
- Single Unit: Triple-insulated cooling unit with sealed lid and convenient handle
- Multi-System: 15 gallon cooling unit with wheels and retractable handle
- Manufactured with UL approved electrical components and motors
- Easy to refill
- Heavy-duty pump and cooling unit for durability and long-life
- Adjustable temperature controller hoses allow users to adjust the shirt/poncho temperature to their personal comfort level



COOL SHIRT™

Personal Cooling Systems

- *Better reaction times*
- *Faster decision making*
- *Less mistakes*
- *Reduces sweating*
- *Reduces dehydration*
- *Reduces heart rate*
- *Helps maintain a safe core body temperature*

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