

Understanding **Body Fluids**



This pamphlet will address questions we are often asked by physicians, nurses, therapists, and other healthcare professionals regarding pneumatic compression therapies.

EAGLE HEALTHCARE provides pneumatic compression therapies to patients for use in the home. Our modalities have been clinically tested and proven, and are convenient as well as safe to use in the home.

As specialists in pneumatic compression therapies, we have evaluated the available systems from all the leading manufacturers. This enables us to recommend and provide the best modality for each patient's condition. Also our healthcare professionals provide quality patient care and follow-up for your patient.

We are able to attain a high degree patient compliance with all of our modalities and greatly impact the improvement of the patient's condition.

Our healthcare professionals provide free home delivery/set-up on all medical equipment. We will train and follow-up each patient with written reports provided both initially after patient training and a progress report after thirty days.



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The main constituent in the human body is water, averaging approximately 60 percent of body weight/or men and 55 percent/or women. With age, the percentage decreases to approximately 45 to 55 percent in older adults. The fluids in the body contain solutes, which are dissolved solid substances known as electrolytes and nonelectrolytes. Electrolytes are mineral compounds that carry an electrical charge. These include sodium, potassium, chloride, and phosphate. Nonelectrolytes include glucose (simple sugar) and urea.

Throughout the body, fluids are found in two compartments: the intracellular (fluid found within cells) and the extracellular (fluid found outside of individual cells). Approximately two-thirds of the body's fluid is intracellular, while one-third is extracellular. The extracellular fluid includes plasma, the liquid portion of the blood; lymph; interstitial fluid, which surrounds and bathes the cells and is the source of lymphatic fluid; and transcellular fluid, specialized fluids that are separated from the interstitial fluid by membranes. The latter category includes cerebrospinal fluid (the fluid that bathes and cushions the brain and spinal cord), pericardial fluid (a thin layer of fluid that surrounds the heart), pleural fluid (a thin layer of fluid that surrounds the lungs), synovial fluid (fluid that lubricates the joints), intraocular fluids (fluids that bathe and nourish the eyes), and digestive secretions. The fluid compartments in the body are separated by permeable membranes that allow the movement of water and solutes. While water and some small molecules can move easily between compartments, proteins do not cross the membranes with ease.

Edema is the swelling of tissue due to an accumulation of fluid. Ordinary edema usually indicates an expansion of the volume of interstitial fluid, the result of obstruction in the veins, heart failure, inflammation, or increased retention of sodium and water. Its symptoms may include swelling of the ankles, legs, and/or fingers, or puffiness around the eyes. Treatment usually involves restriction of sodium and fluids, the use of support hose, diuretic therapy (water pills) to increase the excretion of sodium and water through the kidneys, and, in extreme cases, dialysis.

In contrast, the swelling caused by lymphedema arises when the lymphatic system—lymphatic vessels or lymph nodes or both—is damaged and cannot transport lymph back to the blood circulation. When this happens, large protein and fat molecules collect in the interstitial spaces and chronic inflammation and scar tissue develop. Because its normal flow is impeded, lymphatic fluid backs up, causing the swelling called lymphedema. While restriction of sodium and fluids may help to reduce some of the swelling, diuretics are of limited value in treating lymphedema. In fact, the International Society of Lymphology Executive Committee reports that although diuretics may occasionally be useful during the initial phase of treatment, long-term use of these drugs is of marginal benefit and may cause complications such as electrolyte (body chemistry) disturbances. In addition, because diuretics move fluids out of the body so effectively, they may be dangerous to patients with certain cardiac conditions, deep venous thrombosis (blood clots in the veins), or congestive heart failure.
