Mus - Skel - Theory

Introduction -

Since the greater part of the MS functions to oppose gravity, weightlessness could be expected to cause large adaptive changes. This is particularly true of the legs and back where muscles and bone rapidly loss mass. Tendons and joints may be expected to change as well and the intervertebral discs demonstrate this by causing an increase in height of up to 2 ins. In addition to the changes in the MS itself, disuse of large muscle masses are reflected into the CVR. The NM is also affected ~~directly~~ by weightlessness and M.S. effects on disuse. These latter two systems are discussed under the CVR and NS sections respectively.

Concepts - Muscle ~~functions to produced changes~~ force and motion. Bone ~~produces~~ is the counterpoise

to ~~each~~ muscle forces as well as providing an integrating scaffold for the body's parts. ~~D~~ Bone & muscle(s) frequently form mechanically functional units. ~~and it appears that~~ ~~Large muscle masses produce the~~ Joints obviously allow motion but must carry through the ~~mx~~ muscle & other forces. Both bone and muscle respond to ~~their~~ changing loads, muscle ~~in~~ ~~c~~ a time constant of ~~days~~ weeks while bone responds in months. Muscle through a variety changes at the microspic level is capable of large ~~ch~~ changes ~~to~~ in response to external demands. ~~Those~~ ~~#~~ response are ~~frequently~~ specific to the load implied eg. strength & mass increase ~~c~~ ~~applied~~ increase force demands while ~~endurance~~ repetitive loads induce changes which increase endurance.

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Muscle - The following is information ~~are items~~ essential to an understanding of changes seen in weightlessness which is ~~an extreme~~ a form of disuse atrophy.

Training Strength -

The regular exercise of a muscle at loads near it's current maximum capacity results in several well known changes including increased strength and mass. Innumerable efforts have been made to find optimum