

PROGRESSIVE LOADING TREADMILLS IN THE REHABILITATION OF LOWER EXTREMITY BONY STRESS INJURY IN ELITE RUNNERS

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OBJECTIVE: To describe a novel approach at rehabilitation of lower extremity injuries in elite running athletes through utilization of a progressive loading functional progression. Bony stress injuries are a common and potentially serious occurrence in running athletes. Conservative treatment traditionally consists of care including rest and activity modification. Rehabilitation programs utilizing progressive loading treadmills may increase the speed of return to competition with minimal risk of complications.

METHODS: Three elite athletes were diagnosed as having bony stress injuries, consisting of two Grade IV fractures (distal tibia and ischium) and one Grade II stress reaction (femoral shaft) of the lower extremity. All diagnoses were confirmed through physical examination, Magnetic Resonance Imaging and/or plain film radiographs. The selected athletes returned to sporting activity with a functional progressive rehabilitation plan which centered on the utilization of progressive loading through the use of an antigravity treadmill. Unweighting was achieved by using air in a pressure-controlled chamber to lift the user. Specific unweighting loads ranged from 0-80% of the user's body weight.

RESULTS: Time between diagnosis and initiation of unloaded running ranged from 3 to 7 weeks. Treadmill use was used over a course of 4-8 weeks. Athletes were followed for 4-5 months after the termination of their rehabilitation. No relapses of injury were detected following discharge.

CONCLUSIONS: The use of a measurable loading plan in the progressive functional rehabilitation of lower extremity injuries in elite running athletes through the use of an antigravity treadmill provided good results in a series of 3 consecutive cases.