



Summary

Industry:	Other
Application:	Physical therapy training device
Actual Saving:	Patient satisfaction
Payback Period:	Ongoing



A Pain in the Back: Redesigning Exercise Equipment

ISSUE

Our client were looking for a way to create a physical therapy training/exercise device for those who have suffered from back injuries.

However, in most cases physical therapy training devices for back injuries are not effective due to the fact it is impossible to create a comfortable position that does not cause pain. The all purpose design of the seat on traditional weight machines does not provide core stability for the back allowing the user to move which could result in damaging the vertebrae further, particularly on the upward return stroke.

In addition the problem of the heavy weight (weighs about 400kg) and the large dimension of the machine means that the device is not mobile.

The customer came to ERIKS for support in creating a machine where the user could be secure and stable with a user friendly set up. The initial consultation and set up could take about 30 minutes by a specialist, but once seating requirements are understood the subsequent visits could be set must be within minutes.

SOLUTION

To get the level of accuracy required ERIKS engineers added adjustable knee supports and linear actuators to the seat. These amends allow the machine to be adjusted precisely to the desired position for the patient whilst providing the necessary stability.

Due to the weights used, the device is quite large and heavy, as a result of weight and gravity, the training force is only in one direction. ERIKS engineers developed an AC servo generator/motor with bespoke software to make the device smaller and bidirectional. During the move, depending on the position of the back, it is possible to create a profile instead of only one force.

In addition a rotary actuator was applied to the weights to eliminate injury on the return stroke due to gravitational force.

OTHER BENEFITS

- Design expertise

FURTHER COMMENTS...

ERIKS engineers successfully redesigned the equipment to offer the level of accuracy required to deliver a bespoke experience to their patients, enabling their needs to be fully met.

MORE INFORMATION

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