CLAIMS

1. An apparatus for reducing effects of tremors on an area of the human body, the apparatus comprising a gyroscope device and an attachment assembly for attachment of the gyroscope device to a location on the human body in the area, wherein the attachment assembly provides a substantially inelastic attachment to the location and comprises a gyroscope mount; characterised in that the gyroscope mount comprises a substantially stiff first plate having a shape adapted to substantially correspond with a shape of the human body in the location.

2. An apparatus as claimed in claim 1 wherein the substantially inelastic attachment comprises at least one substantially inelastic strap attachable to the first plate and securable around and/or against the location, optionally wherein the strap includes a tension or tightness indication system; optionally ~~.~~

~~3. An apparatus as claimed in claim 2~~ wherein the strap maintains, in use, a strap tension of about 0.3 Nm.

3~~4~~. An apparatus as claimed in claim 1 wherein the substantially inelastic attachment comprises a demountable cuff formed of a substantially inelastic material; optionally ~~.~~

~~5. An apparatus as claimed in claim 4~~ wherein the cuff is in the form of a glove or part of a glove attachable to a hand of a person.

4~~6~~. An apparatus as claimed in any preceding claim wherein the substantially inelastic attachment is formed of a first polymeric material which is substantially inelastic embedded within a second polymeric material which may be substantially inelastic or elastic; optionally ~~.~~

~~7. An apparatus as claimed in claim 6~~ wherein the second polymeric material is a synthetic rubber, optionally a neoprene or polychloroprene rubber.

58. An apparatus as claimed in any preceding claim wherein the substantially inelastic attachment is formed of a fabric having a thickness of from 1 to 3 mm.

69. An apparatus as claimed in any preceding claim wherein the substantially inelastic attachment is demountable to the area of the human body; optionally .

~~10. An apparatus as claimed in claim 9~~ wherein the attachment is demountable by means of a fastening device orientated longitudinally with respect to the area of the human body.

711. An apparatus as claimed in claim 610 wherein the fastening device is a zip fastening device; optionally .

~~12. An apparatus as claimed in claim 10 or claim 11~~ wherein the zip fastening device runs substantially the entire length of the substantially inelastic attachment; further optionally .

~~13. An apparatus as claimed in claim 11 or claim 12~~ wherein the zip fastening device has a zip puller and the zip fastener device is orientated such that mounting of the apparatus to the human body is achieved, in use, by a pulling action on the zip puller.

814 An apparatus as claimed in any preceding claim wherein the attachment assembly further comprises a second plate mountable to the body such that a compression or clamping force can be applied to the body; optionally .

~~15. An apparatus as claimed in claim 14~~ wherein the second plate is substantially stiff or .

~~16. An apparatus as claimed in claim 14~~ wherein the second plate is flexible; further optionally .

~~17. An apparatus as claimed in any one of claims 14 to 16~~ wherein the second plate is a perforated plate.

9~~18~~. An apparatus as claimed in ~~any one of~~ claim~~s~~ 8~~14 to 17~~ wherein at least one of the first plate and the second plate is formed of a polymeric material, a metal, a metal alloy, wood or a composite material.

1~~09~~. An apparatus as claimed in ~~any one of~~ claim~~s~~ 8 or claim 9~~14 to18~~ wherein the compression or clamping force is:

i) about 50N or more, optionally about 100N or more; and/or

ii) ~~.~~

~~20. An apparatus as claimed in any one of claims 14 to 19 wherein the compression or clamping force is~~ about 300N or less, optionally about 200N or less.

1~~2~~1. An apparatus as claimed in claim 8 or claim 9 ~~claim 19 or claim 20~~ wherein the compression or clamping force is from 50 to 300 N, optionally from 100 to 200 N.

1~~2~~2. An apparatus as claimed in any preceding claim wherein the first plate is substantially rigid.

1~~2~~3. An apparatus as claimed in any preceding claim wherein the area of the body is a hand and wherein the first plate is dimensioned so as not to overlie, in use, the proximal and distal phalanges of the thumb.

1~~2~~4. An apparatus as claimed in any preceding claim wherein the area of the body is a hand and wherein the first plate has a generally annular sectoral shape having an outer curvature corresponding generally to the curvature of the knuckles of the hand.

1~~2~~5. An apparatus as claimed in claim 1~~2~~3 or claim 1~~2~~4 wherein the first plate is dimensioned so as not to overlie, in use, the knuckles of the hand.

1~~2~~6. An apparatus as claimed in any one of claims 8 to 11~~14~~ or any one of claims 1~~2~~5 to 1~~2~~5 when dependent on claim 8~~14~~ wherein the area of the body is a hand and wherein the second plate is dimensioned so as not to extend, in use, to the knuckles of the hand or to the proximal and distal phalanges of the thumb.

127. An apparatus as claimed in any preceding claim in which the attachment assembly further comprises a visual indication system to indicate when the attachment assembly is applied, in use, with a correct force or tension against the location.

128. An apparatus as claimed in any preceding claim wherein the gyroscope device includes a gyroscope housing and the gyroscope housing and gyroscope mount include mutually interacting elements such that the gyroscope housing is demountable from the gyroscope mount, optionally wherein the interacting elements include a positive locking feature to retain the gyroscope housing mounted to the gyroscope mount; optionally wherein the interacting elements provide a slide-to-lock fitting, a bayonet fitting or a twist-to-lock fitting.

129. An apparatus as claimed in any preceding claim wherein the attachment assembly further comprises a passive tremor stabilisation component.

230. An apparatus as claimed in claim 129 wherein the passive tremor stabilisation component comprises a stretchable fabric shaped and dimensioned to be appliable to or around the location; optionally .

~~31. An apparatus as claimed in claim 30~~ wherein the component extends beyond the location and provides different compressive characteristics along a length of the component; further optionally .

~~32. An apparatus as claimed in claim 31~~ wherein the compressive characteristics are in the range of 1.7 kpa to 4.8 kpa (13mmHg to 36mmHg) as measured according to BSI 661210:2018.

2133. An apparatus as claimed in any preceding claim further comprising a joint stabilisation apparatus.

2234. An apparatus as claimed in claim 2133 wherein the gyroscope mount is mountable to the human body adjacent a joint and to one side thereof and wherein the joint stabilisation apparatus comprises a generally elongate linkage having first and second ends, wherein the first end is coupled to the gyroscope mount and the second end is couple to a joint movement

retardation device mountable to a second side of the joint, wherein the joint movement retardation device is adapted to apply a retardation force to the second end of the linkage to counter flexing of the joint; optionally ~~.~~

~~35. An apparatus as claimed in claim 34~~ wherein the first end of the linkage includes a universal joint.

2~~3~~6. An apparatus as claimed in ~~any one of~~ claim~~s~~ 21 or 22~~33 to 35~~ wherein the joint stabilisation device comprises or further comprises an elastic hysteresis device adapted to apply an elastic stabilising force to the gyroscope mount; optionally ~~.~~

~~37. An apparatus as claimed in claim 36~~ wherein the gyroscope mount is mountable to the human body adjacent a joint and to a first side thereof and wherein the elastic hysteresis device comprises a band or strap securable to a second side of the joint and further comprising a linkage comprising first and second elastic members, each member being oppositely disposed above and below the hinge axis of the joint.

24~~38~~. An apparatus as claimed in any one of claims 21~~34~~ to 2~~3~~7 ~~~~wherein the joint movement retardation device comprises a frictional device adapted to apply a frictional stabilising force to the second end of the linkage.

25~~39~~. An apparatus as claimed in any one of claims 21~~34~~ to 24~~38~~ wherein the joint movement retardation device comprises a braking disc assembly comprising a sensor to sense a movement of the second end of the linkage and an electromagnetically actuatable disc brake actuatable, in response to an input from the sensor, to apply a braking force to the second end of the linkage.

26~~40~~. An apparatus as claimed in any one of claims 21~~34~~ to 25~~39~~ wherein the joint movement retardation device comprises a dashpot coupled to the second end of the linkage.

2741. An apparatus as claimed in any one of claims 2134 to 2640 wherein the joint movement retardation device comprises a magneto-rheological damping device coupled to the second end of the linkage.

2842. An apparatus as claimed in any preceding claim wherein the gyroscope device includes an electrically driven motor and wherein the apparatus further comprises a power pack and control system for the motor of the gyroscope device.

2943. An apparatus as claimed in claim 2842 wherein the power pack is demountably attachable to the apparatus at a position remote the gyroscope attachment assembly; optionally .

~~44. An apparatus as claimed in claim 43~~ wherein the power pack is electrically couplable to the gyroscope device by means of a demountable electrical connector; further optionally .

~~45. An apparatus as claimed in claim 44~~ wherein the demountable electrical connector is a self-orientating electrical connector; yet further optionally .

~~46. An apparatus as claimed in claim 44 or claim 45~~ wherein the demountable electrical connector comprises a magnetic power connector wherein the connector comprises first and second connector elements and wherein each element comprises a magnet of opposite polarity to a positionally corresponding magnet in the other element.

3047. An apparatus as claimed in ~~any one of~~ claim~~s~~ 28 or claim 29~~42 to 46~~ wherein the power pack is mountable adjacent the area of the human body.

3148. An apparatus as claimed in any preceding claim wherein the gyroscopic device comprises at least one control moment gyroscope or at least one reaction wheel.

3249. An apparatus as claimed in any preceding claim further comprising at least one vibrational unit.

33~~50~~. An apparatus as claimed in any preceding claim comprising a plurality of gyroscopic devices.