

Traumatic radial head subluxation in young children: a case report and literature review

Woo C. JMPT 1987; 10(4): 191-200

Traumatic radial head subluxation in young children is reviewed. This minor condition commonly results from a sudden longitudinal traumatic pull on pronated and extended forearm and appears to be infrequently recognized or diagnosed. Differential diagnosis of traumatic radial head subluxation from traumatic radial head dislocation, congenital radial head dislocation, brachial plexus palsy, and "invisible" elbow fractures are discussed. It is postulated here that there are two types of traumatic rotary radial head subluxation in pronation, the simple type and the lateral type. Careful analysis of anteroposterior view of elbow reveals the change of the shape and position of the radial tuberosity indicating the simple type, or concomitant with lateral displacement of the radial head on the ulna indicating the lateral type. The lateral type and its reposition are demonstrated when premanipulative roentgenograms are compared with postmanipulative roentgenograms in one of the eight illustrative cases. Details of the supination manipulative reduction are described and demonstrated. (J Manipulative Physiol Ther 1987; 10:191-200).

KEY WORDS: Radius, subluxation, elbow, injury, pediatric, radiology, manipulation, chiropractic.

Locomotor biomechanics and pathomechanics: a review

Brown LP, Yavorsky P. J Ortho Sport Phys Ther 1987; 9(1): 3-10

This review is intended to provide a working knowledge of clinical anatomy and arthrokinematics of the foot and ankle. Primary functions of the foot, gait cycle, and pathomechanics will also be discussed. Emphasis is placed on basic biomechanical considerations which form the basis for both static and dynamic evaluations. Also presented are some of the most commonly seen osseous deformities contributing to pathomechanics.

Calcaneal pain: a review of various disorders

Doxey GE. J Ortho Sports Phys Ther 1987; 9(1): 25-32

The heel is a common site of foot pain. However, determining the etiology of the pain requires performing a careful history, and a specific biomechanical and musculoskeletal examination supplemented with appropriate radiological and laboratory tests. The etiology of calcaneal pain is commonly related to enthesopathy, arthritic conditions, entrapment of foot nerves, dysfunction of soft tissues, and bony stress syndromes. Treatment of calcaneal pain is directed at establishing appropriate balance of the musculoskeletal system in the lower leg, developing an activity or training program that controls mechanical stresses, providing an environment where the pericardial tissue can heal, and (when appropriate) altering plantar contact or biomechanical function of the foot with foot orthotic devices.

Abnormal biomechanics of the foot and ankle

Donatelli R. J Ortho Sports Phys Ther 1987; 9(1): 11-16

The biomechanics of the foot and ankle is important to the normal function of the lower extremity. The foot is the terminal joint in the lower kinetic chain that opposes external resistance. Proper arthrokinematic movement within the foot and ankle influences the ability of the lower limb to attenuate the forces of weightbearing. It is important for the lower extremity to distribute and dissipate compressive, tensile, shearing, and rotatory forces during the stance phase of gait. Inadequate distribution of these forces could lead to abnormal stress and eventual breakdown of connective tissue and muscle. Pathologies such as heel spurs, hallux valgus, neuromas, hallux limitus, shin splints, and nonspecific knee pain result from abnormal mechanics of the foot and ankle. The use of orthotics to re-establish the normal biomechanics of the foot and ankle have profound clinical applications. The combined effect of muscle, bone, ligaments, and normal biomechanics will result in the most efficient force attenuation in the lower limb.

Recruitment of internal oblique and transversus abdominis muscles during the eccentric phase of the curl-up exercise

Miller MI, Medeiros JM. Physical Ther 1987; 67(8): 1213-7

The purpose of this study was to analyze the results of a training method to increase voluntary recruitment of internal oblique and transversus abdominis muscles. Forty volunteers were assigned to either a Control or an Experimental Group. Training consisted of multisensory (auditory, tactile, visual, and kinesthetic) cuing focused on the lower abdominal muscles during the slow curl-back (eccentric) phase of curl-up exercises with the subjects' feet unsupported. We recorded integrated electromyographic (IEMG) values using surface electrodes from internal oblique and transversus abdominis muscles during pretest and posttest exercises. Using an analysis of covariance, posttest IEMG values of the Experimental Group were significantly higher ($p < .001$) than the Control Group. Our results reveal that multisensory cuing with the feet unsupported during the curl-back is an effective method of increasing combined recruitment of internal oblique and transversus abdominis muscles. Motor skills developed by this technique are discussed in relation to optimal trunk function and rehabilitation.

KEY WORDS: abdominal wall, exercise therapy, physical therapy.

Mechanisms of intervertebral joint fixation: a literature review

Rahlmann JF. JMPT 1987; 10(4): 177-187

The cause of restricted intervertebral mobility, or joint fixation, has generated much speculation. A number of etiologies have been proposed in the literature by authors addressing this question. The four possible theories that merit further investigation include meniscoid

entrapment, displaced intervertebral disc fragments, segmental or intersegmental muscle spasm and periarticular connective tissue adhesions.

The two questions to be addressed for each theory are how each mechanism acutely restrict intervertebral joint movement and how does a high-velocity manipulation restore movement and relieve symptoms? The pros and cons of each theory are presented, citing the relevant literature. In addition, research possibilities to further investigate each mechanism are presented. (*J Manipulative Physiol Ther* 1987; 10:177-187).

KEY WORDS: apophyseal joints, menisci, muscle spindles, spinal manipulation, spinal reflexes chiropractic.

Use of force platform variables to quantify the effects of chiropractic manipulation on gait symmetry

Robinson RO, Herzog W and Nigg BM. *JMPT* 1987; 10(4): 172-176

The purpose of this investigation was to determine whether force platform measurements can be used to objectively assess short-term effects of spinal manipulation on patients with diagnosed, chronic unilateral "sacroiliac dyskinesia," here defined as decreased inter-articular mobility of the sacroiliac joint. Nine patients walked across a force platform, were then manipulated by a chiropractor and then repeated and gait trials. Temporal and kinetic gait variables from the force platform measurements were analyzed for changes in the symmetry of the subjects' gait before and after treatment sessions. There was a distinct tendency towards improved gait symmetry after treatment in those cases where the gait was asymmetric prior to the treatment. This result indicated that force platform measurements may be used successfully to assess the effects of spinal manipulations of the gait of patients with sacroiliac dyskinesia. (*J Manipulative Physiol Ther* 1987; 10:172-176)

KEY WORDS: gait, manipulation, sacroiliac joint.

Effect of lumbar posture on lifting

Hart DL, Stobbe TJ, Jaraiedu M. *Spine* 1987; 12(2): 138-45

Twenty laborers assumed specific lumbar spine postures and lifted a 157 N crate to three different hand heights to determine if lumbar spine flexion moments or trunk muscle activity were affected by the lifting postures. Lumbar flexion moments were lowest when the workers used the lordotic and straight back postures, while the average erector spinae muscle activity tended to the highest in the lordotic and straight back postures. The kyphotic posture regularly reduced the activity of the erector spinae to bursts of activity while lifting and caused more discomfort during the lifting tasks than any other posture. Therefore, the lumbar lordotic posture is recommended as the posture of choice while lifting, particularly when lifting from the floor level.

KEY WORDS: lumbar spine flexion, in vivo tests, postures.

CT-functional diagnostic of the rotatory instability of upper cervical spine: an experimental study of cadavers

Dvorak J, Panjabi M, Gerber M, et al. *Spine* 1987; 12(3): 197-205

Twelve specimens of the upper cervical spine were functionally examined by using radiography, cineradiography and computerized tomographic (CT) scan. The range of rotation was measured from CT images after maximal rotations to both sides. The left alar ligament was then cut and the examination repeated. The alar and transverse ligaments could be differentiated on CT Images in axial, sagittal, and coronal views. Rotation at occiput - atlas was 4.35° to the right and 5.9° to the left and at atlas - axis it was 31.4° to the right and 33° to the left. After one-sided lesion of the alar ligament, there was an overall increase of 10.8° or 30% of original rotation to the opposite side, divided about equally between the occiput - atlas and the atlas - axis. It is concluded that a lesion (irreversible overstretching or rupture of alar ligaments) can result in rotatory hypermobility or instability of the upper cervical spine.

KEY WORDS: upper cervical spine, rotary instability, alar ligaments.

Inhibition - facilitation technique for the lumbar pain treatment

Brodin H. *Manual Med* 1987; 3:24-26

The effect of a modified Mitchell's muscle energy technique was studied. 41 patients with pain from one or two lumbar segments with reduced mobility were organized in one treated group and in one non-treated control group. Every week all patients reported their pain level at rest and during activity according to a 9-graded scale. After treatment for three weeks the pain reduction in the treated group was statistically greater than in the non-treated group. The mobility of the lumbar spine increased among those with reduced pain.

KEY WORDS: low back pain, mobilization, treatment evaluation, manual medicine.

Correction of progressive idiopathic scoliosis utilizing neuromuscular stimulation and manipulation: a case report

Aspegren DD, Cox JM. *JMPT* 1987; 10(4): 147-156

Presented is a case report of chiropractic manipulation therapy and transcutaneous neuromuscular stimulation utilized in the treatment of progressive adolescent idiopathic scoliosis. The curvature was shown to be progressing at the rate of 1.0°/month for the 9 previous months. The patient's curvature was successfully stopped at 27° and reversed to 17° in the first 3 months of care. After 9 months of nighttime stimulation, the curvature was recorded at 23°. Also included is a review of conservative scoliotic care and the effects of physical forces on glycoprotein structures. (*J Manipulative Physiol Ther* 1987;10:147-156)

KEY WORDS: chiropractic, scoliosis, transcutaneous neuromuscular stimulation (TSN), manipulative therapy.

Inter- and intra-examiner reliability of palpation for sacroiliac joint dysfunction

Carmichael JP. JMPT 1987; 10(4): 164-171

The purpose of this study was to operationally define and evaluate inter- and intra-examiner reliability of the standing sacroiliac mobility (Gillet) test on 53 college students. Both inter- and intra-examiner reliability data showed high mean percentages of agreement (85.3% and 89.2%, respectively.) Cohen's unweighted kappa statistic for concordance was applied yielding "fair" concordance for aggregate intra-examiner data and "slight" concordance for aggregate inter-examiner data. The intra-examiner reliability data suggests that the Gillet test is clinically useful for a single examiner in assessing the sacroiliac joint for mobility dysfunction, especially at upper sacroiliac contact points. Linear regression analyses suggest that the test is sensitive, in that reliability improves with increasing perceived abnormality. Further revisions to the operational definition may improve both inter- and intra-examiner reliability of the Gillet test. (J Manipulative Physiol Ther 1987; 10:164-171)

KEY WORDS: sacroiliac joint, reliability, chiropractic, diagnosis.

Inter- and intra-examiner reliability of the upper cervical x-ray making system: a second look

Jackson BL, Barker W, Bentz J and Gambale AG.
JMPT 1987; 10(4): 157-163

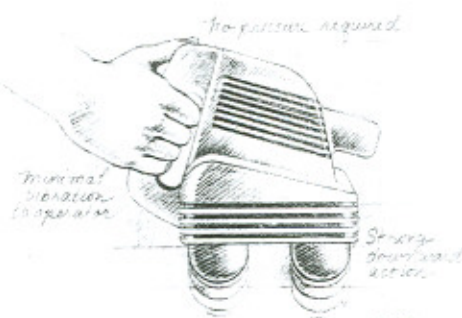
To determine the degree of reliability (stability over time) for six Pettibon practitioners, the scores resulting from the reading and re-reading of 30 X-rays were analyzed using bivariate scattergrams, Pearson Productmoment correlation coefficient estimates and correlated samples *t* tests. To examine reliability (equivalence over experts) across the practitioners, a repeated measures analysis of variance approach was used. Liberal and conservative reliability coefficients for the upper angle and lower angle were computed. Examination of the data suggest that the reliability (stability over time) for the practitioners is very good. The data on reliability (equivalence over experts) across the practitioners also suggests reliability is very good. (J Manipulative Physiol Ther 1987;10:157-163)

KEY WORDS: reliability study, cervical spine, radiography, chiropractic.

ONE OF A SERIES

PERCUSSOR^{vs} ORBITAL

• or how to massage your patients not yourself •



Thumper®

Thumper, like its predecessor the Vibrotone®, massages your patients not you. Thumper's patented percussion design penetrates deep into soft tissues with little force required. Best of all, the action is directed to your patient instead of your hands. And that can make a difference in a long day.

thumper.
Professional Body Massager

The professional massager that works for you. Call Collect 0-416-477-5222 ext. 24



Orbital

All other massagers vibrate laterally, as electric sanders do. If you want to direct them downward you have to apply the force yourself. Lateral movement "rubs" the skin and may cause itching and discomfort. Worst of all, your hand vibrates as well. Think of the effects day after day, year after year. You owe it to yourself to try Thumper.

Chain reactions in disturbed function of the motor system

Lewit K. Manual Med 1987; 3:27-29

Experience teaches us that a single type of disturbance of function does not remain isolated and is as a rule linked to other such disturbances. This is because function cannot be strictly localised as it implies disturbed *relation* between structures. These disorders are not haphazard but follow certain patterns or chains, which makes examination of patients much easier for the experienced examiner. The rule behind these patterns can be derived from the following basic functions of the locomotor system: 1. the lower extremity subserves gait; typical disturbance affects the pattern of flexion and/or extension; 2. the upper extremities subserve prehension; disturbance again effects the pattern of flexion and extension; 3. the trunk subserves body statics and respiration; disturbance affects primarily key regions of the spinal column and those muscle pairs which are essential for balance; disturbed respiration (mainly lifting of the thorax) causes overstrain of the neck musculature and the cervical spine; 4. head and neck subserve again body statics and food intake plus speech and respiration. None of these functions is isolated and strictly limited to the main

section of the motor system given above, and all can also be disturbed by lesions outside the motor system. Chain reactions are typically one-sided.

KEY WORDS: chain reactions, disturbed function, motor system.

Painful plantar heel, plantar fasciitis and calcaneal spur: etiology and treatment

Kosmahl EM, Kosmahl HE. J Ortho Sports Phys Ther 1987; 9(1): 17-24

Painful plantar heel is a relatively common clinical entity encountered by the health care professional who treats patients with foot complaints. Plantar fasciitis and calcaneal spurs are frequently associated with this condition. The most common etiology involves abnormal pronation with resultant increased tension forces developed in the structures attaching in the region of the calcaneal tuberosity. This article reviews the relevant anatomy, pathomechanics, pathophysiology, and clinical presentation of the painful plantar heel patient. A course of treatment is suggested.

LAST OF A SERIES

PATIENT vs OPERATOR

• or you're both important •



Most massagers are designed for patients not the doctor. Thumper® is designed for you both. Self-balancing, its own 8-pound weight supplies all the needed force. Its large area coverage massages both groups of paraspinal muscles simultaneously; lets you treat both thighs or calves at once. Small areas can be reached by tilting Thumper, using only one of the massage spheres. Four power settings change the amplitude of massage not merely the RPM.

Thumper is sold in one place only, the factory that makes it. This lets you deal directly with experts. Our staff will be glad to answer any questions you may have, about Thumper or massagers in general. We've been solving Chiropractors' massage problems since 1978. How can we help you?

thumper.
Professional Body Massager



Try Thumper at no risk. Take the first 30 days with Thumper as a test. If you're not completely satisfied, return it for a full refund. You can't lose. Thumper is backed with a 3-year professional warranty on parts and labour.

\$399 (Professional Discounts Available)

Call Toll Free 1-800-387-4211 ext. 24

In Canada call collect 0-416-477-5222 ext. 24



By mail, send to address below. Personal or company cheques require 18 days to process.

Wellness Innovations Corp., Dept. B
1241 Denison St., #40, Markham, Ontario
L3R 4B5

Diurnal variations in the stresses of the lumbar spine

Adams MA, Dolan P, Hutton WC. Spine 1987; 12(2): 130-7

Two complementary experiments were performed, the first on living people and the second on cadaveric spines. In the first experiment, electronic inclinometers were used to measure the range of lumbar flexion of 21 volunteers in the early morning and in the afternoon. The results showed that the range of movement increased by 5° during the day. In the second experiment, cadaveric lumbar motion segments were creep loaded to simulate a day's activity and their bending properties were measured before and after creep. The results showed that creep loading reduces the spine's resistance to bending (the effect being particularly marked in the disc) and increases the range of lumbar flexion by 12.5°. The results of the two experiments were combined to show that in life, forward bending movements subject the lumbar spine to higher bending stresses in the early morning compared with later in the day. The increase is about 300% for the discs and 80% for the ligaments of the neural arch. It is concluded that lumbar discs and ligaments are at greater risk or injury in the early morning.

KEY WORDS: lumbar discs, *in vivo* and *vivo* testing, bending stress, morning increases.

Pressure threshold measurement for diagnosis of myofascial pain and evaluation of treatment results

Fischer AA. Clinical J Pain 1986; 2: 207-214

Pressure threshold is the minimum pressure inducing pain or discomfort. A force gauge (11-kg gauge), to which a rubber disc with an exactly 1-cm² surface is attached, has been proven to be adequate for quantification of tenderness in soft tissues. The pressure threshold measurement (PTM) is useful for documentation and identification of tender spots, as well as quantification of the degree of tenderness (pain). Normal values were established in 24 male and 26 female volunteers at nine different sites, frequently affected by trigger points, including trapezius, supraspinatus, infraspinatus, teres major, lumbar paraspinals, (two sites), and gluteus and pectoralis muscles. The deltoid was used as reference for usually normal muscle sensitivity. The clinical use of PTM is discussed, and includes quantification of tenderness for medicolegal purposes, but primarily to prove to patients and other health professionals the presence of trigger points or tender spots. The reaction to different treatment modalities, such as physiotherapy and drugs, can be assessed quantitatively. After properly administered trigger point injections, consisting of needling of entire abnormal area, PTM increases, usually by 4 kg/cm². Failure to raise PTM indicates that the injection was incomplete, and the procedure should be repeated. PTM correlates well with changes of clinical status and can be used for monitoring tenderness, inflammation, and the activity of arthritis.

KEY WORDS: pressure, threshold, documentation, trigger points, pressure points, myofascial pain.

Lumbar instability: a dynamic approach by traction-compression radiography

Friberg O. Spine 1987; 12(2): 119-29

Translatory segmental instability was provoked by successive axial traction and compression of the lumbar spine in 117 patients with a known spondyl- or retro-olisthetic displacement. Lateral spot radiography showed an anteroposterior translatory movement of 5 mm or more in 24 of 45 patients with lytic spondylolisthesis of L5, in all of 7 patients with degenerative spondylolisthesis of L4, and in 37 of 65 patients with a retro-olisthetic displacement of L3, L4, or L5. In cases of spondyl- and retro-olisthetic instability the upper vertebra moved posteriorly during traction and anteriorly during compression. Severity of low-back pain (LBP) symptoms did not show any correlation with the degree of the maximal displacement but correlated significantly with the amount of instability both in the case of spondyl- and retro-olisthesis. Traction - compression radiography proved a simple and practical method to diagnose and measure translatory segmental instability even when conventional flexion - extension load failed to provoke any abnormal movement (eg, in the case of spondylolisthesis).

KEY WORDS: low back pain, segmental instability, spondylolysis, spondylolisthesis, retro-olisthesis.

Shoulder impingement syndrome: radiographic findings of eight cases

Casper GP, Marquart DJ. Chiro Sports Med 1987; 1: 65-9

The shoulder impingement syndrome is an important source of shoulder pain in individuals requiring repetitive overhead use of the arm. In athletics this commonly occurs with the swimmer, baseball pitcher, football quarterback, and tennis player. Impingement syndrome is also seen in the middle and older-aged individual regardless of history of a sports injury. The impingement syndrome is caused by the compression of the rotator cuff tendons and subacromial bursa between the humeral head and the structures that make up the coracoacromial arch. Included is a presentation of the clinical and radiographic findings of eight case reports of shoulder impingement syndrome. Briefly reviewed is the classification, diagnosis, and treatment of this condition.

Psychological functioning in five pain syndromes: tension headache, backache, migraine, and temporomandibular and gastrointestinal pain syndromes

Egan KJ, Betrus P. Clinical J Pain 1986; 2: 283-8

This study compared the psychological functioning of 275 individuals requesting outpatient treatment for one of five chronic pain syndromes: tension headaches, backaches, migraine headaches, temporomandibular pain, and gastrointestinal pain syndromes. The measure used to assess psychological functioning was the SCL-90. Results show a continuum of acknowledged psychological distress among the groups,

with the least amount reported by temporomandibular joint pain patients, and the greatest degree of psychological disturbance reported by the gastrointestinal pain patients. Between these two groups were the migraine patients, backache patients, and the tension headache patients, ranging in this sequence from the low to the higher end of reported psychological symptoms. Demographic and health utilization data, along with duration of pain and referral mechanisms, are also reported for each of the groups.

KEY WORDS: psychological, functioning, pain syndromes.

Electrotherapy of chronic musculoskeletal pain: comparison of electroacupuncture and acupuncture-like transcutaneous electrical nerve stimulation

Cheng RSS, Pomeranz B. *Clinical J Pain* 1986; 2: 143-9

This study compared two ways of treating chronic musculoskeletal pain, using randomized assignment of 131 patients to one of two electrotherapy methods: electroacupuncture or acupuncture-like TENS. For the latter a new device called Codetron (Trademark of EHM) was used which had many features to ensure strong and unhabituated stimulation. For both methods, frequencies of 4 Hz and 200 Hz were used to optimize release of endorphins and serotonin. Initial outcomes were evaluated using visual analogue scales for pain relief and activity improvements. The "initial" outcomes during treatment weeks were not significantly different for both electrotherapy methods. Follow-up data were obtained by telephone 4 to 8 months after cessation of therapy: these were significantly better for Codetron than for electroacupuncture but we must remain cautious about telephone interviews.

KEY WORDS: TENS, acupuncture, electroacupuncture, electrotherapy, analgesia, pain.

Reflex sympathetic dystrophy associated with multiple lumbar laminectomies

Dorbritt DW, Hartrick CT. *Clinical J Pain* 1986; 2: 119-121

Reflex sympathetic dystrophy (RSD) is an often devastating chronic pain condition that can develop following relatively trivial traumatic events. The precise mechanism and predisposing factors governing the development and progression of this syndrome are not completely understood. However, RSD most commonly presents distally in an extremity following injury to the limb. Rarely has it been reported following lumbar laminectomy or ruptured lumbar disc (1, 2). Of those cases reported, the RSD was relatively acute, mild, and unilateral (1-3). We present a case of severe, chronic, bilateral RSD following multiple laminectomies and propose a possible mechanism to explain these findings.

KEY WORDS: reflex sympathetic dystrophy, causalgia, Sudeck's atrophy, lumbar laminectomy.

The effect of bending and rotation of the trunk on the intra-abdominal pressure and the erector spinae muscle when lifting while sitting

Boudrifa H, Davies BT. *Ergonomics* 1987; 30: 103-109

The effect of bending and rotation of the trunk on the intra-abdominal pressure (IAP) and erector spinae muscle activity when lifting while sitting has been investigated. The analysis of the IAP results shows that the difference between lifting from the middle and lifting from either the left or right is highly significant ($P < 0.01$), whereas the difference between mean values for lifting from the right and left is not significant. The iEMG results from the erector spinae of the left of L3 level show that the difference between the mean values of the iEMG when lifting from the right and left is highly significant ($P < 0.01$). The difference between lifting from the right and middle is also significant ($P < 0.01$). Back muscle activity from the erector spinae on the right of L3 level is lower when lifting with trunk rotated to the right and highest when it is rotated to the left as compared to lifting from the middle. Both parameters increased as bending of the trunk increased.

KEY WORDS: lifting, flexion, rotation, intra-abdominal pressure, EMG, sitting.

Influence of load and attempted lifting-speed on the kinematics of a lifting task

Hall SJ. *Chiro Sports Med* 1987; 1: 11-14

Although it is generally regarded as desirable to maintain an erect posture during lifting, results of previous studies suggest that the inclination of the trunk during lifting may be influenced by variables such as load magnitude and lifting-speed. Variations in movement kinematics were examined during a dynamic lifting task performed at nine different load/lifting-speed combinations by 10 subjects. Loads were 40, 60, and 80% of each subject's maximum lifting capability, with target lifting-times of 1.5, 3.5, and 7 seconds. Sagittal view films taken at 50 frames/second were digitized to provide quantified kinematic records of the lifts. Effects of load and attempted lifting-time on trunk inclination were assessed through two-factor ANOVA's and subsequent Scheffé tests. Trunk flexion was found to persist for significantly ($P < 0.05$) longer periods of time under the 40% load and 1.5-second lifting-time conditions. The implication is that patients with spinal disorders or generalized low back pain should be encouraged to be particularly cautious about maintaining an erect posture when performing light lifts and to avoid lifting rapidly.

"C'MON, LET'S SEE WHAT THIS OLD HEAP WILL DO."

What it may "do" is put you in a wheelchair for life. Drive with care.



CANADIAN PARAPLEGIC ASSOCIATION