

SSWG Postural Management. Master Evidence Table alphabetised by first author

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Abbott CA, Helliwell PS, & Chamberlain MA	1994	Functional assessment in ankylosing spondylitis:evaluation of a new self-adminisered questionnaire and correlation with anthropometric variables.	Br J Rheumatol, Nov ;33(11): 1060-6	"A [statistically] significant improvement in functional score as a result of treatment...."	Physiotherapy	4	RF	Pre and post longitudinal comparison n=42 A/K patients. ABSTRACT	ADL Mob	
Angelo J	2000	Factors affecting the use of a single switch with assistive technology devices.	J Rehab Res & Dev, V37 N5 591-598	Eleven items identified as essential to the single switch assessment..... inc. position, volitional nature of movement, reliability of motor movement..."	Focus group of OTs, expert opinion.	5	RF	n=6 experts ABSTRACT	ADL Mob	
Argenta LC,David LR,Wilson JA,Bell WO.	1996	A n increase in infant cranial deformity with supine sleeping position.	Jour Craniofac Surg, Jan;7(1): 5 – 11.	An increse in the incidence of posterior cranial asymmetry correlates closely with the recommended changes in sleeping position to supine to avoid sudden infant death syndrome. After intervention of study, to date only 3 of 51 children have required surgery.	<u>One group</u> - continuous positioning keeping the infant off the involved side. <u>Another group</u> – wearing of a soft - shell helmet..	4	JC	N=51. Non-random. No controls. Authors believe that results show that most deformities can be corrected without surgery. ABSTRACT	Paeds	
Arthurton M.	1996	Obstretical Brachial Plexis Injury (Erb's Palsy) Protocol & Management	APCP Journal: Aug 1996 p19-32.	Intervention will include - in the first 2 weeks positioning in neutral to allow post trauma recovery. Positioning there after is used with passive movements to maintain ROM and aid recovery.	Physiotherapy & OT.	N / A	JC	A collaborative effort by multi-disciplinary team to produce clinical guidelines.	Neonates	

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AS Shamsuzzaman Y, Sugiyama A Kamiya Fu & T Mano	1998	Head-up suspension in humans: effects on sympathetic vasomotor activity and cardiovascular responses.	Journal of Applied Physiology Vol 84 Issue 5 1513-1519	The results provide evidence that the engagement of anti-gravity muscles during HUT may have additive effects on sympathetic vasomotor and cardiovascular responses to orthostatic stress	Muscle sympathetic nerve activity & cardiovascular responses were measured from the tibial nerve, heart rate, blood pressure, stroke volume, cardiac output, and calf blood flow –in head up tilt/head-up suspension	2	GE	N = 13 healthy young subjects	Physiology Influenced by posture	
Askin GN, Hallet R, Hare N & Webb JK.	1997	The outcome of scoliosis surgery in the severely physically handicapped child: an objective and subjective assessment	Spine, Jan, 22(1), 44-50	Physical abilities deteriorate in first 6 months after surgery. By 12 months abilities have returned to postoperative levels.	Spinal fusion with instrumentation	3	SM	Various neuromuscular disorders, n=20, Comparison of pre and post treatment abilities.	Neuro-muscular scoliosis	
Assanasen P Baroody FM Naureckas E Solway J Naclerio RM	2001	Supine position decreases the ability of the nose to warm and humidify air	Journal of Applied Physiology Vol 91(6) (pp 2459-2465)	Data showed that placing subjects in the supine position decreased the ability of the nose to condition Cold/Dry Air compared with the upright position, in contrast to their hypothesis, i.e. Decreasing nasal air volume improves nasal air conditioning.	Cold/dry air given by nasal mask. Temperature and humidity of air measured before and after entering/exiting nasal cavity. Placed in supine and upright position	2	GE	Randomised, two way cross over study on the conditioning capacity of the nose N=6 healthy subjects. Not very accurate measurements.	Physiology influenced by posture	
Ball C Adams J Boyce S Robinson P	2001	Clinical guidelines for use of the prone position in acute respiratory distress syndrome.	Intensive & Critical Care Nursing	The development of clinical guidelines needs for a) improve oxygenation in prone position whilst promoting patient safety. b) Standardize the use of this position. together with other criteria e.g. passive movements etc	Potential for research in this area	5	GE	N/A	Physiology influenced by posture	

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Boldingh EJK, Lankhorst GJ & Bouter LM	2001	Should luxation of the hip in cerebral palsy be prevented? Relationship between luxation of the hip and complaints in people with severe cerebral palsy.	European Academy of Childhood Disability (EACD), Frambu, Oslo.	Chair adaptations are required to prevent hip migration.	Supportive seating	4	ST	30 Adults Abstract only	CP & seating	
Bolin I Bodin P Kreuter M	2000	Sitting Position-posture and performance in C5-C6 tetraplegia	SPINAL CORD38(7)pp 425-434	Balance, transfers, wheelchair skills, physical strain during wheelchair propulsion, spasticity and respiration were affected by the sitting position in an individual manner. An analytical working method is required & co-operation between professionals-OT & PT – is important.	4x complete tetraplegia patients who reported dissatisfaction with posture & seating took part in the study.	3	GE	Small case studies used to prove conclusively	Physiology influenced by posture.	
Bolin I, Bodin P & Kreuter M	2000	Sitting position – posture and performance in C5-C6 tetraplegia.	Int Med Soc of Paraplegia, V38, N7: 425-434	Customised interventions improve function in this group.	Reduction of kyphotic posture & pelvic obliquity by adaptations to seating	5	RF	n=4 case study. qualitative ABSTRACT	ADL Mob	
Boreelo-France, Diane F Ray G Burdett Zena L Gee	1988	Modification of sitting posture of patients with Hemiplegia using seat boards and back boards	Physical Therapy Volume 68 / Number 1 Pg 67-71	Use of seat board, seat and back board, or no alterations to wheelchair in postural alignment of hemi pa.	Equipment versus non-equipment	3 or 5	K M	N=41. Split into groups using sb, sbb, and no boards - comparison	Posture in Neurological conditions	
Bouisset S Duchenne J-L	1994	Is body balance more perturbed by respiration in seating than in standing?	Neuroreport. Vol 5(8) (pp957-960)	The respiratory component of the sway path was larger seated than in standing subjects. It concluded that respiration is a significant input for postural control, and that sitting entails less instantaneous steadiness.	The pneumograms and displacement were recorded during quiet, deep breathing and apnoea Stabilometric parameters power spectrum and time-locked average were used and measured	3	GE	10 normal subjects were used. The concept of respiratory synergy was discussed	Physiology aspects influencing /influenced by posture	

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Braithwaite MA	1986	Cardiorespiratory consequences of unfused scoliosis	Br J Dis Chest 80(4) 3600-9	Disabling dyspnoea or cardiorespiratory failure was associated with either scoliosis of early onset or with independent cardiac or pulmonary disease	Sex, age of onset of curvature, severity at the time of presentation, degree of dyspnoea, presence of independent cardiac or pulmonary disease and smoking habits were recorded.	3	GE	Retrospective study of approx. 800 scoliotic patients attending chest clinic over 25 yrs.	Physiology influenced by posture	
Brook, PD, Kennedy, JD: Stern, LM, Sutherland, AF: Foster, BK;	1996	Spinal Fusion in Duchenne Muscular Dystrophy	Journal of Paediatric Orthopaedics	Luque rod provided a mean correction of 60% and control of pelvic obliquity	Comparison between Galveston and Luque methods of spinal fusion	1	M.M	Contains follow up study Journal	NeuMus	
Bullman W.A., Dormans JP, Ecker ML and Drummonds D	1996	Posterior spinal fusion for scoliosis in patients with cerebral palsy: a comparison of Luque Rod and Unit Rod Instrumentation	Journal of Pediatric Orthopaedics; June; 16(3): 314-323	Cobb angle and pelvic obliquity correction with dual Luque rod instrumentation of 49 and 57 percent respectively; with Unit Rod instrumentation corrections of 62 and 79 percent respectively.	Posterior fusion (a) dual Luque rod instrumentation (b). Unit Rod instrumentation Anterior release in some cases.	4	SM	Cerebral palsy, Cobb angle 83°, pelvic obliquity 24°. n=15 for treatment (a). n=15 for treatment (b).	Neuro-muscular scoliosis	
Carstens C Paul K Niethard FU Pfeil J	1991	Effects of scoliosis surgery on pulmonary function in patients with myelomeningocele	J Pediatr Orthop	Postoperatively, despite anterior approach for 8 children, 8 pts had increased VC and ^pts forced expiratory vol.	Tested for pulmonary changes 1mth before & average of 13mths after spinal stabilisation.	3	GE	Average time of OP. 12yrs 11mths. 10 had restriction in pulmonary function pre-operatively. No control used How?	Physiology influenced by posture.	
Carter, G	1997	Rehabilitation management in neuromuscular diseases	Journal of neuro rehab	An overall review of neuromuscular conditions	Looks at PT, OT, Surgery, etc	5	M.M	A lit review and experiences Journal	NeuMus	

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Chan Angela, Heck Carol S	1999	The effects of tilting the seating position of a wheelchair on respiration, posture, fatigue, voice volume, and exertion outcomes in individuals with advanced Multiple Sclerosis	J Rehabil Outcomes Meas. 3(4),1-14	Measuring the afore- mentioned when tilting the wheelchair by 25 deg and 45 deg with pa of similar degree of disabil. Randomized trial	Tilt of back rest on wheel chair	1	K M	N=40 randomized to one of two groups.	Postural and seating	
Chandler D & Knackert B	1997	Brief or New - Positioners for wheelchairs in Long-term care facilities.	American Journal of OT Vol51(10) p921-924	Currently there is limited literature that addresses low cost solutions to the problems of lateral leaning.	Insertion of lateral supports into wheelchairs	N/A	CD	Opinion piece - no evidence base.	Elderly	
Chern C-M Kou TB-J Sheng W-Y Wong W-J Luk Y-O Hsu L-C Hu H-H	1999	Spectral analysis of arterial blood pressure and cerebral blood flow velocity during supine rest and orthostasis	Journal of Cerebral Blood Flow & Metabolism	The authors found that the index was dependant on the extent of orthostatic changes and can be mathematically expressed, suggesting its involvement in cerebrovascular regulation. All observations could be an important step forward further insight into cardiovascular regulation, which warrants more research in the future	Power ratios of the effect of orthostasis on low frequency fluctuations in the blood flow velocity of the middle cerebral artery in relation to arterial blood pressure in supine/head tilt.	2	GE	N= 22 healthy subjects during supine rest and head tilt	Physiology influenced by posture	
Clarke AM, Redden JF	1992	Management of hip posture in cerebral palsy	Journal of the Royal Society of Medicine 1992; Vol 85: 150-151	Hips kept in an abducted position improves femoral head location, minimises pain, and allows better interaction with surroundings.	Supportive seating	5	ST	Description of Sandall Wood wheelchair	CP & seating	
Colbert A.P. & Craig C.	1987	Scoliosis management in Duchenne Muscular dystrophy: prospective study of modified Jewett Hyperextension brace,	<u>Arch Phys Med Rehabilitation</u> , May, 68, 302-304.	No significant difference between the rates of curve progression in treatment & control group (9° and 11° per year respectively).	Spinal Brace (Jewett Hyperextension brace)	3	SM	Duchenne muscular dystrophy subjects. Treatment group n=7, control group n=15	Neuro-muscular scoliosis	

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Comstock CP, Leach J, and Wenger DR	1998,	Scoliosis in Total-Body-Involvement Cerebral Palsy: Analysis of Surgical Treatment and Patient and Caregiver Satisfaction	Spine, June, 23(12); 1412-1424.	54 percent Cobb angle correction; 57 percent pelvic obliquity correction.	Spinal fusion with instrumentation. . Both anterior & posterior approach	5	SM	total body involvement cerebral palsy. N=79. Cobb angle 60°, pelvic obliquity 20°.	Neuro-muscular scoliosis	
CPU STEWART	1991	Physiological considerations in seating	Prosthetic & Orthotics International	Those providing seating systems must consider the physiological effects that occur and compromise between these and the other requirements.	Measurements are referred from other references.	3	GE	Referred to a) Cardiovascular/r respiratory system b) Abdominal System c) Renal System d) CNS e) Pain	Physiology Influenced by posture	
CPU Stewart	1991	Physiological considerations in seating	Prosthetics and Orthotics International	The objectives of seating may involve conflicts with many medical considerations. Successful provision of special seating requires the identification of the priorities of those conflicting requirements and subsequent selection of the compromise to achieve a practical solution	Analysed the effect of cardiovascular, respiratory, abdominal, renal and neurological systems	3	GE	An excellent insight of physiology considerations in posture	Physiology influenced by posture	
Culham EG Jimenez HA King CE	1994	Thoracic kyphosis, rib mobility, and lung volumes in normal women and women with osteoporosis.	Spine 19(11) 1250-5	Lung volumes and rib mobility are significantly impaired in women with thoracic kyphosis. Vital capacity, inspiratory capacity, total lung capacity, lateral expansion of the thorax were lower in the osteoporotic group.	Lung volumes were measured using a Spiro meter, and rib mobility, during max insp & exp was monitored with 4 motion sensors placed ant, post, & lat exp of thorax.	1	GE	N= 15 women with kyphosis from osteoporosis. N= 15 healthy women.	Physiology influenced by posture	

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Culman EG Jimenez HAI King CE	1994	Thoracic kyphosis, rib mobility, and lung volumes in normal women and women with osteoporosis	Spine. Vol 19(11) (pp 1250-1255)	Lung volumes and rib mobility were significantly impaired in women with thoracic kyphosis	Background Data: Spinal deformity in ankylosing spondylitis and scoliosis is associated with alterations in respiratory function. Spirometer and rib mobility were monitored.	1	GE	N= 15 healthy women. N= 15 with spinal osteoporosis. There was significant negative correlation between kyphosis angle/aspiratory capacity./ vital capacity/ lateral expansion for a conclusive study	Physiology influenced by posture	
Curley MAQ Thompson JE Arnold JH	2000	The effects of early and repeated prone positioning in paediatric patients with acute lung injury. (Prone for 20 h/d during the acute phase.	Chest 118(1) 156-63	The paediatric patient in this study demonstrated improvements in oxygenation without serious iatrogenic injury after prone positioning.	Cardio respiratory monitoring	3	GE	N=25 from 2mths>17 yrs. With ALI. Provides a foundation for a randomized study investigating effect of earl/repeated positioning on clinical outcomes in paediatric patients with ALI	Physiology influenced by posture	

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Davis PM,Robinson R,Harris L,Cartilidge PHT.	1993	Persistent mild hip deformation in preterm infants.	Arch Dis Child ;69; 597 – 598	In preterm infants it has been shown that hip abduction and external rotation can persist at the age of 3 – 4.5 yrs. Preterm infants often develop a postural deformation of the legs – a'frog leg' posture. The authors state that the use of postural techniques aimed at reducing the deformation in the newborn period is recommended.	Assessment of hip deformity.	2	JC	N=33 of these 20 were control group. A variety of deforming forces can act at different times on the hips of newborn infants. The study does not directly produce evidence of PM,it references its use in other papers.	Paeds	
Day GA Upadhyay SS Ho EK Leong JC Ip M	1994	Pulmonary functions in congenital scoliosis	Spine 19(9) 1027	Vital capacity was found to be significantly reduced in surgically treated pts (68% of predicted value), especially in those pts who had multiple thoracic anomalies. They believe that children with congenital scoliosis should be operated on at an early age, before deformity is severe.	Pulmonary functions were assessed using the Gould 50001V computerised Pulmonary system	1	GE	N= 88 pts in both surgically and non-surgically groups	Physiology influenced by posture	
Del Bene R Barletta G Mello G LazzeriC Mecacci F Parretti E Martini E Vecchiarino S Franchi F La Villa G	2001	Cardiovascular function in pregnancy: effects of posture	Bjog. 108(4): 344-352.	Data indicated that the elevated cardiac output is adequately maintained in pregnancy during the postural challenge, due to optimisation of the responses of preload and after load.	Heart rate, arterial pressure, echocardiography measurement (Teichholz's formula) In supine/standing in varies stages of pregnancy.	3	GE	N=16 healthy women prior to pregnancy > Calculations difficult to follow. N/A to work	Physiology influenced by posture	

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Denise T Reid Alex Sochaniwsky	1991	Effects of anterior tipped seating on respiratory function of normal children and children with cerebral palsy	International Journal of Rehabilitation research	The study suggests that anterior tipped seats may cause an increased tidal volume and minute ventilation in children with CP. The overall differences normal/CP children related more to underlying neuromuscular pathology present in CP.	Respiration>Plethysmograph(Repitrace transducer) > volume controls. Assessment chair with adjustable angles.	1	GE	N= 6 normal children 6 CP children	Physiology influenced by posture	
Downs JA,Edwards AD,McCormick kDC,Roth SD,Stewart AL,	1991	Effect of intervention on the development of hip posture in very preterm babies.	Arch Dis Child. 66:197-201.	The authors proposed that maintaining the infant's functional posture during the NICU stay would prevent shortening of muscles and decrease neuromotor abnormalities later on in life.	Neonatal therapist implemented and supervised the positioning of infants. Direct positioning was carried out using towel rolls and beanbags.	1	JC	The author demonstrated specifically that hip adduction and neutral rotation were promoted in infants born at 24-28 weeks.		
Dr BR Celli Boston USA	1998	Respiratory muscles. Functional evaluation	Seminars in Respiratory & Critical Care Medicine Vol 19(4) (pp367-381)	Determination of the respiratory rate and observation of the thoracic-abdominal displacement in the upright and supine position complement the initial evaluation of respiratory muscle function. The addition of oesophageal and gastric pressures, EMG and thoracoabdominal movements add certainty to the evaluation.	Measurement by spirometry in sitting and supine position	4	GE	Future use of the MRI will add a new evaluation of respiratory muscle function. The article offered a tool to enhance knowledge of respiration and posture	Physiology influenced by posture	
Dr SE TangsrudOslo Norway	2001	Lung function measurement in young children with spinal muscle atrophy; a cross survey on effect of position and bracing (N.B. Page 6 DMD & Orthotic management by SM)	Archives of Disease in childhood Vol 84(6) (pp 521-524)	Impairment of tidal respiration must be considered when applying spinal bracing in very young children developing scoliosis with SMA i.e. In sitting > reduced with brace.	Measured by single breath occlusion technique. Muscular strength was assessed by the Brooks scale.	5	GE	SMA type 1&2 in both supine and sitting N=8 With/without brace N=5 Compliance > in sitting but not statistically significant.	Physiology influenced by posture.	

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Dunn RB, Walter JS, Lucero Y, Weaver F, Langbein E, Fehr L, Johnson P & Reidy L	1998	Follow up assessment of standing mobility device users.	Assist Technol 10(2) 84-93.	Survey of SCI patient-perceived benefits: suggest high satisfaction with standing mobility devices, viz bowel, UTI, leg spasticity & bed sores. "...highly recommended..." by users.	Standing mobility used by spinal cord injured patients	5	RF	n=33 ABSTRACT	ADL Mob	
Duport G, Gayet E, Pries Pet al	1995	Spinal Deformities and wheelchair seating in DMD: Twenty years of research and clinical experience	Seminars in Neurology vol15 no1 pp29-37	A review of spinal surgery and conservative management	Some good photographs in this article	5	M.M	A lit review and authors experiences Journal	NeuMus	
Elkin SL, Fainey A, Burnett S, Kemp M, Kyd P, Burgess J, Compston JE, Hodson ME	2001	Vertebral deformities and low bone mineral density in adults with cystic fibrosis: a cross sectional study	Osteoporosis Int 12(5) 366-72	Fragility fractures and hypovitaminosis D occur commonly in adult pts with CF. Low bone mineral density occurs in patients with severe disease and significantly relates to forced expiratory volume in 1second.	Duel –energy X ray absorptiometry scanning of the lumbar spine and hip, radiology of the spine 7 biomechanical studies.	3	GE	107 pts (58 men) aged 18-60 underwent the studies. 38% had a Z score of <-1. 13% having Z score<-21.17% had evidence of vert deformity.etc	Physiology influenced by posture	
Enable Ireland	2002	Web site	N/A	Foreign perspective: illustrates trend to regard assistive technology and postural management as mutually dependent	Service development model	N/A	RF	Useful pointer. contains some apposite definitions WEBSITE	ADL Mob	
Eng JJ, Levins SM, Townson AF, Mah-Jones D, Bremner J & Huston G	2001	Use of prolonged standing for individuals with spinal cord injury	Physical Therapy, V81, N8,1392-1399	38 of 126 participants reported improvements to well being, physiological function, sleep, fatigue & pain.	Standing therapy	5	RF	No controls. Subjects selected by authors. Self reported qualitative ABSTRACT	ADL Mob	

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Ferrari E Chevallier T Chapelier A Baudouy M	1999	Travel as a risk for Thromboembolic Disease	Chest 115 440-444	A history of recent travel is a risk factor for VTED. Posttravelvenous thrombotic events can occur after short journeys in patients with no other risk factors or concomitant	N/A	2	GE	N=160 Train/plane	Physiology influenced by posture	
Findlay A in Rennie J	2001	ISBN 1-86156-192-X	Book. Learning Disability. Physical Therapy, Treatment and Management. A Collaborative Approach. Chapter 10	Case studies – emphasis on use of equipment to achieve “good positioning” over a 24 hour period. Emphasis on multidisciplinary team to contain physical consequences of neurodisability	Physiotherapy led community care of LD clients	5	RF	Expert opinion / account of current practice BOOK	ADL Mob	
Florence, J	1999	Neuromuscular Disorders in childhood and physiotherapy intervention	Tecklin, J.S. (1999) Paediatric Physical Therapy 3 rd Edition Philadelphia Lippincott (Chapter six)	An overall review of physio input	PT	5	M.M	A very good lit review BOOK	NeuMus	
Fox P, Richardson J, McInnes B, Tait D	1997	Bed Positioning Programs for Older Adults in a chronic care hospital - a survey.	Physical & Occupational Therapy in Geriatrics Vol 15(1) p75-87	A bed positioning program has a potentially large impact. In an ageing population, the number of patients potentially requiring this clinical intervention will increase.	Semi-structured questionnaire to 21 therapists	5	CD	Low sample size (21) unable to generalise	Elderly	
Fox P, Richardson J, McInnes B, Tait D, Bedard M	2000	Effectiveness of a Bed Positioning Program (BPP) for treating older adults with knee contractures who are institutionalized	Physical Therapy Vol 80 (4) p363-372	The BPP consisted of stretching a patients knee into extension and then securing and maintaining the position for 40 minutes, 4 times per week.	Random assignment to 2 groups. BPP 8 wks then no intervention No intervention then BPP for 8 wks.	2/3	CD	Sample size low (21)	Elderly	

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Franzeck UK Fischer M. Constanzo U Herrig I Bollinger A	1996	Effect of postural changes on human lymphatic capillary pressure of the skin	Journal of Physiology Vol 494(2) (pp 595-600)	The present result support of the suggestion of enhanced intrinsic activity of lymph precollectors and collectors in the dependent position. This mechanism is primarily responsible for the propulsion of lymph from the periphery to the thoracic duct during quiet sitting, when extrinsic pumping of the calf muscle is not active	Measurement was performed in supine/sitting positions, measured at the dorsum of the foot.	3	GE	The influence of postural changes on cutaneous lymphatic capillary pressure and venous pressure were measured in 12 volunteers. ? Use in pressure management	Physiology influenced by posture	
Fromageot C Lofaso F Annane D Falaize L Lejaille M Clair B Gajdos P Raphael JC	2001	Supine fall in lung volumes in the assessment of diaphragmatic weakness in neuromuscular disorders	Archives of Physical Medicine & Rehabilitation	Simple Vital Capacity measurement in the sitting and supine positions may be helpful in detecting severe or predominant diaphragmatic weakness.	Vital Capacity and moth pressure generated during a maximal static inspiratory effort were measured with patients in both sitting and supine position.	1	GE	N= 24 with generalized neuromuscular disease. This Outcome Measure produced measurable results.	Physiology influenced by posture	

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Gerber LH,BinderB, BerryR,SiegalK L,KimH,WeintrobJ,LeeYJ,MizellS,MariniJ.	1997	Effects of Withdrawal of Bracing in Matched Pairs of Children with Osteogenesis Imperfecta.	Arch Phys Med Rehabil Vol 79,Jan.1998.	Withdrawal of HKAFO in children with OI who had achieved upright activity was not associated with significant decrease in muscle strength or independence, but there was an associated increase in fracture rate that nearly reached significance.	Orthotics - Standard treatment plan during braced periods with matched pairs having HKAFOs removed. Cross-over design - after 16 months groups crossed over.	3	JC	N=10. The authors believe that HKAFO's may promote independent activity by providing stability of the pelvic girdle, controlling knee recurvatum and severe hindfoot valgus. More children were immobilized for surgical or fracture management during their unbraced than their braced interval.	Paeds	
Goldsmith S	2000	The Mansfield project. Postural care at night within a community setting.	Physiotherapy, 88 (10) 528-534	Quality of sleep and preservation of body symmetry during supine or side lying. Mixed cohort – all at risk of postural abnormality. Long periods of uncontrolled posture at night detrimental.	Use of Symmetrikit night positioning kit	4-5	RF	Case series. Emphasis on one technical solution only.	CP	
Goodwill CJ in Goodwill CJ & Chamberlain MN	1998	Wheelchairs	Book. Rehabilitation of the Physically Disabled Adult. Chapter 43, 701-723	Expert opinion: position / comfort influences ability to control / self propel	Wheelchair provision & selection	N/A	RF	Expert opinion / account of current practice BOOK	ADL Mob	

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Green EM, Mulchay CM, Pountney TE	1995	An investigation into the development of early postural control	Dev med Child Neurol 37(5) 437-48	Relation between normal sitting & lying ability same for infants with CP	Cross-sectional, some retrospective element. Observation of child development - no treatment	2-3	RF	18 normal infants – video & phot record lying & sitting. 34 CP infants – cross-sectional study	CP & seating	
Gross A	1989	The effects of a supported seating position on upper extremity control in children with cerebral palsy.	Phys Occup Ther Pediatr 1989; 9:143	Upper extremity control (during the performance of a reaching task) was not significantly different in unsupported sitting and sitting in adaptive seating.	Supported sitting	4	ST	6 children Abstract only No controls	CP & seating	
Guo X, Matousek M, Sonn U, Sundh V, Steen B.	2000	Self-reported and performance-based mobility related to instrumental activities of daily living in women aged 62 and older. A population study.	Aging (Milano) Aug, 12 (4):295-300	Performance-based mobility test and self reporting are predictor of the mobility components of ADL. Self reporting is a valid reliable measure.	N/A. Mobility assessment and self-reportage	N/A	RF	n=854 Scientific measurement used to confirm self-reported mobility during ADL ABSTRACT	ADL Mobility	
Hammel J, Heller T & Ying G-S.	1998	Outcomes of assistive technology services and use by adults with developmental disabilities.	Proc. RESNA '98, 26-30 June, Minneapolis	Significant difference in Functional Independence Measure between adults with and without AT services.	Provision AT services in community	3 / 2	RF	n=35. Unsure about randomisation. Authors did not select clients for AT services. ABSTRACT	ADL Mobility	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Hammel J, Lai J-S, Heller T	1999	Functional outcomes of assistive technology for adults with developmental disabilities	Proc RESNA '99, 25-29 June, Long Beach Veteran Affairs, ed Springle S.	Significant difference in functional status between adults with and without AT services.	Provision AT services in community	3 /2	RF	n=109 with vs n=159 without. Unsure about randomisation. Authors did not select clients for AT services. ABSTRACT	ADL Mobility	
Hankinson J. & Morton RE.	2002	Use of a lying hip abduction system in children with bilateral cerebral palsy: a pilot study	Developmental Medicine & Child Neurology, 44:177-180	In those who can tolerate the system there is a significant improvement in positioning for seating and toileting and in the hip migration % of the right hip.	Evaluation of the use of the Jenx Dreamer lying system and it's effect on hip stability on X-ray, sleep and ease of positioning.	5	JC	N = 7 No controls. Non-randomised comparison of pre and post measures.	CP – Postural Management	
Harms Micheles	1990	Effect of wheelchair design on posture and comfort of user.	Physiotherapy May; 76(5) : 266-271	Evaluation of three seating systems, degree of kyphosis and comfort to user.	Adapted non-adapted wheelchairs and their effectiveness.	3	K M	N = 28 (13 disabled, 15 able-bodied) Comparison	Postural Management	
Hart D.A. & MacDonald C.M.	1998	Spinal deformity in progressive neuromuscular disease. Natural history and management	<u>Phys Med & Rehabil Clinics N Am</u> ; Feb; 9(1): 213-232, viii	Spinal fusion with instrumentation is the only effective means of reducing and slowing the progression of the deformity. The effects of surgery on respiratory function or life expectancy in this patient group has not been established.	Surgical, orthotic and seating	N/a	SM	Review of literature on spinal deformity in progressive neuromuscular disease. 92 references.	Neuro-muscular scoliosis	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Haslock J	1993	Ankylosing spondylitis	Baillieres Clinical Rheumatology. Vol 7(1) pp99-115.	The most widespread involvement of the respiratory system by this disease occurs when this pathological process gives rise to chest wall pain, diminished chest wall movement and a dorsal stoop. Diaphragmatic function is unimpaired/compensates> minor restrictive changes in tests of respiratory function. Breathlessness in AS is cardiac involvement.	Cardio-respiratory measurements/ monitoring	4	GE	A good reference for treatment of AS		
Healy A, Ramsey C & Sexsmith E	1997	Postural support systems: their fabrication and functional use.	Dev Med & Child Neurol 1997; 39: 706-710	Potential outcomes of proper seating and positioning include. . .maintenance of skeletal alignment . . . and maximised stability that enhances function.	Supportive seating	4	ST	Qualitative. No controls	CP & seating	
Heller KD, Forst R, Hengstler K	1997	Scoliosis in Duchenne Muscular Dystrophy	Prosthetics and Orthotics International 21 pp202-209	Although surgical intervention is the best option, orthotics in the form of a spinal jacket can offer an alternative to those unsuitable for surgery	Surgery and orthotics	5	M.M	Authors experiences of 28 patients	NeuMus	
Heller KD, Forst R., Forst J, Hengstler K.;	1997	Scoliosis in Duchenne muscular dystrophy: aspects of orthotic treatment	<u>Prosthet Orthot Int</u> ; Dec; 21(3): 202-209	No reduction in vital capacity or increase in residual volume with brace usage.	Individually fabricated thoracolumbosacral orthosis	5	SM	Duchenne muscular dystrophy subjects. n=28, no controls.	Neuro-muscular scoliosis	
Hobson DA Tooms RE	1992	Seated Lumbar/pelvic alignment	Spine Mar; 17(3); 293-8	A comparison between Spinal cord injured and non injured	Measurement of spine when seated.	5	K M	N = 22 (12 disabled, 10 able bodied) distinct differences	Postural management	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Home RSC Ferens D Watts A Vitkovic J Lacey B Andrew S Cranage SM Chau B Adamson TM	2001	The prone sleeping position impairs arousability in term infants	Journal of Pediatrics	The prone position significantly impairs arousal from both active sleep and quiet sleep in healthy term infants. This impairment in arousability occurred with no clinically significant changes in cardio respiratory variables or body temperature. This provided an important insight into a risk factor for sudden infant syndrome	Multiple measurements of arousal threshold in response to air-jet stimulation were used. Also daytime polysomnography.	1	GE	N= 24	Physiology influenced by posture	
Hsu J, Furumasu J	1993	Gait and Posture Changes in the DMD child	Clinical orthopaedics and related research March 1993 NO 288 pp122-125	Bracing improves body alignment and maintains limb stability passively. Surgical correction of contractures is recommended as an adjunct to the overall care of the ambulatory DMD child	Surgery and orthotics	4	M.M	A retrospective study looking at 24 DMD patients JOURNAL	NeuMus	
Hsu, Jonh, D	1990	Spine care of the patient with DMD	SPINE: State of the art reviews Vol4 No1 p161-172	Care of the spine is an integral part of the overall management of the wheelchair dependent muscular dystrophy patient	Surgery, Wheelchair, Orthotics and Physiotherapy	5	M.M	A review of practice to 1990 JOURNAL	NeuMus	
Hughson RL Edwards MR O'Leary DD Shoemaker JK	2001	Critical Analysis of cerebrovascular auto regulation during repeated head-up tilt	Stroke	Cerebrovascular auto regulation is achieved by changes in resistance in response to modulations in perfusion pressure whether spontaneous or induced by repeated head tilt.	Cerebral blood flow estimated from mean flow velocity by Doppler ultrasound.	3	GE	N= 8 healthy subjects> 10 sec supine/rest 10 sec 45° head-up tilt total 12x cycles	Physiology influenced by posture	
Hulme J, Poor R, Schulein M & Pezzino J	1983	Perceived behavioural changes observed with adaptive seating devices and training programs for multi-handicapped developmentally disabled individuals.	Phys Ther 1983;63: 204-8	Long-term adaptive seating appears to improve head control, grasp, and sitting posture in young children with cerebral palsy (1-4 years).	Supportive seating	5	ST	41 clients Questionnaire based on perceptions of parents/clients No controls. Tentative statement.	CP & seating	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Hulme J, Gallacher K, Welsh J, Niesen S & Waldron D	1987	Behavioural and postural changes observed with the use of adaptive seating by clients with multiple handicaps.	Phys Ther 1987; 67: 1060-7	Adaptive seating improves sitting posture, head control, and grasp.	Supportive seating	3	ST	19 children Structured observation and parent questionnaire	CP & seating	
Hulme J, Shaver J, Acher S, Mullette L & Eggert C	1987	Effects of adaptive seating on the eating and drinking of children with multiple handicaps.	Am J Occup Ther 1987; 41:81-8	The long-term use of adaptive seating in young children with cerebral palsy appears to improve eating skills involving food retention and increases textures managed.	Supportive seating	3	ST	11 children Observational rating scale. Highly tentative.	CP & seating	
Hulme J, Bain B, Hardin M, McKinnon A & Waldron D	1989	The influence of adaptive seating devices on vocalisation.	Commun Discord 1989;22:137-45	Long term adaptive seating appears to be effective in increasing vocalisations in children with cerebral palsy (18 months- 3 years)	Supportive seating	3	ST	8 children 6-month intervention period during which maturation could have taken place.	CP & seating	
Hulme JB, Shaver J, Acher S, Mullette I, Eggert C.	1987	Effects of adaptive seating devices on the eating and drinking of children with multiple handicaps.	Am J Occup Ther ;41 (2):81- 9.	Sitting posture and head alignment during eating and drinking improved significantly. A significant increase in the frequency with which the food and liquid was retained in the mouth was noted. A significant number of children progressed from bottle to cup and from blended to chopped food.	Exploration of the effects of adaptive seating on oral-motor functioning as it relates to eating and drinking.	4	JC	N= 11 children aged between 1 and 4 years. An assessment instrument with a behavioral base was used, observing each child's motor behavior. A parent pre- and post-equipment questionnaire was also used.	Paeds	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Ishida C Fujita M Umemoto H Taneda M Sanae N Tazaki T	1990	Respiratory function in handicapped children	Brain Dev 12(4) 372-5	Aim to evaluate rep function of severely handicapped children. Concluded that the respiratory function in a nom-sitter with reduced tidal volume is impaired, and that preventative measures must be taken against respiratory infection.	Tidal volumes & respiratory rates were determined.	1	GE	N= total 130 children n= 39 non-sitters lower than n= 49 ambulators or n=42 sitters.	Physiology influenced by posture.	
Jagger C, Arthur AJ, Spiers NA, Clarke M.	2001	Patterns of onset of disability in activities of daily living with age.	J Am Geriatr Soc, Apr;49 (4):404-9	Order of ADL restriction: bathing, mobility, toileting, dressing, bed-chair transfers, and feeding.	N/A, trend observation	N/A	RF	Large cohort longitudinal study, n=1344 ABSTRACT	ADL Mobility	
Janssen-Potten, Ynonne J Msc Henk A Seleen, Phd Jan Drukker Phd, Toon Huson Maarten R Drost, Phd	2001	The effect of seat tilting on Pelvic Position, balance control, and compensatory postural muscle use in Paraplegic subjects.	Phys Med Rehab Vol 82 pg1393-1402	Study the effect of 10deg seat tilting on pelvic tilt, balance control and postural muscle use in pa with thoracic SCI	10deg forward inclination of wheelchair.	4 or 5	K M	N = 30 (10 high thoracic, 10 lower thoracic, compared with 10 able bodied	Postural alignment	
Jay P in Goodwill CJ & Chamberlain MN.	1988	Seating and support systems	Book. Rehabilitation of the Physically Disabled Adult. Chapter 42, 687-700	Expert opinion: position / comfort influences ability to control / self propel	Wheelchair provision & selection	N/A	RF	Expert opinion / account of current practice BOOK	ADL Mob	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Kearon C Viviani GR Kirkly A Killian KJ	1993	Factors determining pulmonary function in adolescent idiopathic thoracic scoliosis	American Review of Respiratory diseases Vol 148(2) (pp 288-294)	The relationship with deformity/impairment of lung function was complex. The severity of pulmonary impairment <u>cannot</u> be inferred to a clinically useful extent from the angle of scoliosis alone	Radii logic and physiologic measurements were made	4	GE	N=66 subjects with Idiopathic Scoliosis not having had spinal surgery. I noted rotation/respiratory muscle strength/duration of the curve <u>did not</u> relate to pulmonary function	Physiology influenced by posture	
Kearon C Viviani GR Kirkley A Killian KJ	1993	Factors determining pulmonary function in adolescent idiopathic thoracic scoliosis	Am Rev RespirDis 148(2) 288-94	Concluded that features of the spinal deformity are the major determinants of pulmonary impairment of idiopathic thoracic scoliosis but that the relationship between deformity and impairment is complex. The severity of pulmonary impairment cannot be inferred to a clinically useful extent from the angle of scoliosis alone.	Pulmonary functions were assessed by measuring lung volumes & diffuse capacity. Radiologic & physiologic were made. Angle of scoliosis was measured.	2	GE	N= 66 pts with idiopathic scoliosis, who had not had surgery	Physiology influenced by posture	
Keene DJ Wimmer JE Mathew OP	2000	Does supine positioning increase apnoea, bradycardia, and desaturation in preterm infants?	Journal of Perinatology 20(1) 17-20	Results suggest that the cardio respiratory stability of preterm infants is not significantly compromised by supine positioning	Monitoring of cardiorepiratory stability in alternating positions(prone or supine)	3	GE	N = 22 preterm infants.	Physiology influenced by posture	
Ketelaar M, Vermeer A, Hart H, Beek EP & Helders JM	2001	Effects of a functional therapy program on motor abilities of children with cerebral palsy.	Physical Therapy, V81 N9: 1534-1545.	Functional therapy group versus PT based on normalization of movement group. Functional group better ADL score. Children 2-7 yrs.	Functional vs 'Normal' therapy	1 - 2	RF	Randomized design. Counfounding bias not alluded to, but large group n=55 ABSTRACT	ADL Mob	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Konishi N Takesshita K	1998	A case of renal failure caused by rhabdomyolysis with thrombosis of the deep vein of the right leg, following sleeping in a straight sitting position for a long time	Nippon Jinzo Gakkai Shi	They believe that when the extremities are compressed (and/or crushed) for a long time, venous thrombosis of extremities occurs due to compression, as in this case study	Electromyogram of the right anterotibial muscle /test of conduction velocity of right tibial nerve revealed neurological disturbance causes by thrombosis of the deep vein	5	GE	Only 1/ 41 yr old women used in this study	Physiology influenced by posture	
Kragg G, stokes B, Groh J, Helewa A, Goldsmith C.	1990	The effects of comprehensive home physiotherapy and supervision on patients with ankylosing spondylitis.	J Rheumatol, 17 (2): 228-33	Primary treatment outcome:fingertip-to-floor dist, sig better in treated (PT) than controls.	Home physio & education.	1	RF	Randomized design. Experimental n=27, control n=26 ABSTRACT	ADL Mob	
Krasilovsky G	1993	Seating Assessment and management in a nursing home population	Physical & Occupational Therapy in Geriatrics Vol 11(2) p25-38	Many residents in a nursing facility who present with poor sitting posture do so because of discomfort caused by body alignment changes, neuromuscular conditions or lethargy.	Assessment of body alignment and seating of residents	5	CD	54% of residents requiring improved positioning	Elderly	
Larsson EL, Aaro S., Oberg B.;	1999	Activities and Functional Assessment 1 year after spinal fusion for paralytic scoliosis	<u>European Spine Journal</u> , 8(2), 100-109	Impairment level - improvement in sitting balance, angle of scoliosis and weight distribution. Disability level-improvement in ADL. Handicap level -reduction in resting time & in need for seating support.	Spinal fusion with instrumentation	3	SM	Various neuromuscular and congenital diagnoses	Paralytic scoliosis	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
LaszloZ Rossler A Hinghofer- Szalkay HG	2001	Cardiovascular and humeroral readjustment after different levels of head-up tilt in humans	Aviation Space & Environmental Medicine	Besides specific dose-responses within hemodynamic, volume-dependent, and hormonal variables after loading of different degree, the return to control levels after HUT occurs with distinctly time-courses, which are not identical with those seen after low body negative pressure simulated ortostasis	It directly monitored volume-related, hemodynamic, and endocrine variables during and after 30 min of passive head tilt of various degrees.	3 > difficulty in understanding the relevance of this study	GE	N= 7 persons on 5x days in random order of degree of head tilt	Physiology influenced by posture	
Leong JC Lu WW Luk KD Karlberg EM	1999	Kinematics of the chest cage and spine during breathing in healthy individuals and in patients with adolescent idiopathic scoliosis	Spine 24(13) 1310-5	The range of movement of the chest cage and spine is more limited in the scoliotic cases. This overall stiffness of the chest cage and spine may contribute to the mechanical inefficiency and impairment of pulmonary function found in scoliotic pts.	Chest motions relative to the spine and thoracic spine motions relative to T12 were calculated. Lung function test inclusive of spirometry and lung division were also measured.	1	GE	N= 41 scoliotic pts N=20 healthy individuals	Physiology influenced by posture	
Letts M., Rathbone D., Yamashita T., Nichol B., Keeler A;	1992	Soft Boston brace in management of neuromuscular scoliosis: a preliminary report	<u>Journal of pediatric orthopaedics</u> 12(4), 470-474	Improvement in scoliosis of 36 percent. Improved 'patient tolerance', patient handling' and 'postural positioning'.	Soft Boston orthosis.	5	SM	Various neuromuscular diagnoses. N=55. Average curvature 42°.	Neuro-muscular scoliosis	
Li HQ	1989	Changes in lung ventilation functions in 332 patients with deformity of the spinal column	Zhonghua He He Hu Xi Za Zhi `2(6) 364-6, 383	Pre-operative examination of pulmonary function can provide an objective basis for operative indication, selection of anaesthesia and postoperative care.	Significant differences in VC, forced expired air in one second/forced VC, maximal ventilation volume, index of air flow velocity & residual capacity/total lung capacity between patients & controls	1	GE	Comparisons according to degree of deformity, type of deformity, and duration of disease(over 15yrs & below 10yrs) show significant differences in VC & max vent vol.	Physiology influenced by posture	

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Author	Year	Reference title	Journal, pg & vol	Statement derived from article	Type of treatment	Evidence level	By	Comment	Search area	Check
Libby DM Briscoe WA Boyce B Smith JP	1982	Acute respiratory failure in scoliosis or kyphosis: prolonged survival and treatment	AM J MED73 (4): 532-8	ARF (acute respiratory failure) in adults with severe thoracic spinal deformity is said to be preterminal event with a median survival of one year. Study shows successful management of ARF due to severe scoliosis or kyphosis is possible in the great majority of patients , and long term survival	ARF was treated with controlled low dose oxygen by Venturi mask & intensive general measures in 13 patients & by mechanical ventilation in 7. Of the 7 ventilatory, failure was treated in 2 with tank respirator & a cuirass.	1	GE	Mean time of study from 1965-1985. Mean age range 13-78 yrs.	Physiology influenced by posture	
Lin MC Liaw M-Y Chen W-J Cheng P-T Wong AM-K Chiou W-K	2001	Pulmonary function and spinal characteristics: Their relationship in persons with idiopathic and postpoliomyelitic scoliosis	Archives of Physical Medicine & Rehabilitation Vol 82(3) (pp 335-341)	No single factor can predict the severity of impairment in scoliosis patients' pulmonary function. Uppermost vertebra, scoliotic angle, patients age influence both groups	Main <u>Outcome Measures</u> Pulmonary function: spirometry, lung volume test, and diffusing capacity. Respiratory muscle strength: MIP/MEP. Presence of DOE +LDP recorded Spinal Deformity.inc Cobb angle. Chi-square analyses. Mann-Whitney U test Spearman's rho correlation.	1	GE	N= 44 idiopathic scoliosis. N= 16 postpoliomyetic scoliosis. Sub groups' Abnormal/normal pulmonary function. A very comprehensive study	Physiology and posture	
Lin MC Liaw MY Chen WJ Cheng PT Wong AM Chiou WK	2001	Pulmonary function and spinal characteristics: their relationships in persons with idiopathic and postpoliomyelitic scoliosis.	Arch Phys Med Rehabil	No single factor can predict the severity of impairment in scoliotic pts pulmonary function. In both groups, severity of pulmonary impairment was related to combined features of spinal deformity. uppermost vertebra will influence all groups	Outcome measures were used:+++ie; lung function test. Cobb angle. Chi-square analysis. Mann-Whitney U test.	1	GE	N= 44pts with idiopathic scoliosis. N=16 with postpoliomyelitic .	Physiology influenced by posture	

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Lisboa C Moreno R Fava M Ferretti R Cruz E	1985	Inspiratory muscle function in patients with severe kyphoscoliosis	Am Rev Respir Dis	Concluded that impairment of inspiratory muscle function is related to the development of ventilatory failure in kyphoscoliosis.	Measured transdiaphragmatic (Pdi) pressure & its components: gastric and oesophageal pressures. Max Pdi & max inspiratory mouth pressure were also measured.	2	GE	N=9 patients	Physiology influenced by posture	
Long T Soderstrom E	1995	A Critical Appraisal of Positioning Infants in the Neonatal Intensive Care Unit.	Physical & Occupational Therapy in Paediatrics Vol. 15 (3)	The review indicates that the evidence is stronger for the use of indirect positioning than for direct positioning as a treatment strategy for infants born prematurely in the NICU.	A MEDLINE search for general positioning of infants in the NICU was conducted. Studies divided into 2 groups - Direct & Indirect positioning. Each study was graded using Sackett's levels of evidence.	N/A	JC	An appraisal of 31 studies conducted from 1975-1993. The use of Sackett's frame-work provides the clinician with a model to support or refute their treatment strategies beyond their clinical experience to make informed clinical decisions.	Neonates	
Lonstein J.E. and Akbarnia B.A.;	1983	Operative treatment of spinal deformities in patients with cerebral palsy or mental retardation	<u>JBJS</u> ; 65(1): 43-55	63 percent Cobb angle correction; 69 percent pelvic obliquity correction. Most patients did not change sitting or ambulatory status post surgery.	Posterior fusion with Harrington Rod instrumentation.	5	SM	CP or learning difficulties. N=109. mean Cobb angle 86°, pelvic obliquity 16°	Neuro-muscular scoliosis	

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Mackenzie Colin F (Editorials)	2001	Anatomy, physiology, and pathology of the prone position and postural drainage	Critical Care Medicine Vol. 29(5) 1084-1085	Conduct of this study is important to identify the mechanism patients to benefit from prone position, safety, mentoring, and nursing reasons. In prone there is greater risk of eye damage, ventilator disconnections, extubation, difficulty in viewing monitors, >undetected oxygen desaturation and cardiac dysrhythmias with tracheal suctioning.	General overview of other studies made	4	GE	Good introduction into further studies.	Physiology influenced by posture	
Mackenzie. Colin F	2001	Anatomy, Physiology, and pathology of the prone position and postural drainage.	Critical Care Medicine Vol 29(5) pp1084-1085	Conduct of this study is important not only to identify the mechanism and patients likely to benefit from prone positioning, but also for patient safety, monitoring, and nursing reasons. The prone patient is at greater risk for complications such as eye damage, ventilator disconnections, extubation, difficulty with viewing monitors > undetected oxygen desaturation & cardiac dysrhythmias with tracheal tube suctioning.	References are referred to in other references	4	GE	Good references for postural drainage in chest Physiotherapy	Physiology influenced by posture	
Manolikakis G	1992	Individual care of adduction contractures and threatening paralytic hip dislocations in cerebral palsy using sitting and lying expanding casts.	Orthop Tech 1992;43:810-815	Paralytic hip luxation in children with cerebral palsy can safely be avoided by early surgical soft tissue inventions aimed to decrease the tonus of the spastic hypertonic, muscle groups (i.e. the adductors, flexors, and internal rotators) with subsequent positioning in individually manufactured plastic shells.	Fitting of thermoplastic orthotic shells into wheelchairs.	5	ST	Case studies. Abstract only in English.	CP & seating	

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Maynard V Bignall S Kitchen S	2000	Effect of positioning on respiratory synchrony in non-ventilated pre-term infants. (Whist in sleep state).	Physiotherapy Research International	Prone positioning of pre-term infants recovering from respiratory disease may improve respiratory function. The improvement measured in respiratory synchrony in prone position brings pre-term infants' breathing pattern into line with that expected in term infants.	Respiratory inductance plethysmography + other cardio respiratory measurements.	3	GE	N=10	Physiology influenced by posture	
McDonald, R Wirz, S Surtees, R	2003	A comparison between parents' and therapists' views of their child's seating system	19 th International Seating Symposium	Data generated from questionnaires showed that parents and therapists generally agreed on the reasons why specific equipment was prescribed. Parents focussed on aesthetics more so than therapists. Both groups felt the questionnaires were useful to generate discussion and agree consensus prior to a seating appointment	Questionnaires and Interviews	1	MM	34/36 parents 31/36 therapists	A correlation of views on supportive seating within the wheelchair	
Miedaner J	1990	The effects of sitting positions on trunk extension for children with motor impairments.	Pediatr Phys Ther 1990; 2:11-4	Active trunk extension is improved in adaptive seating (consisting of an anterior tipped seat and kneeblocks).	Supportive seating	1	ST	15 children Statistically significant results. No blind assessment of outcome.	CP & seating	
Miedaner J & Finuf L	1993	Effects of adaptive positioning on psychological test scores for pre-school children with cerebral palsy.	Pediatr Phys Ther 1993; 5:177-82	Young children with cerebral palsy appear to perform better on the Bayley Mental Scale when using an adaptive seating system than when not supported.	Supportive seating	1	ST	12 children Statistically significant results No blind assessment of outcome.	CP & seating	

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Miller A., Temple T. & Miller F.	1996	Impact of Orthoses on the Rate of Scoliosis Progression in Children with Cerebral Palsy	<u>J. Pediatr Orthop</u> ; June; 16 (3): 332-335	No significant difference in age at which Cobb angles reached 50° in treatment & control group.	Spinal brace	4	SM	Spastic quadriplegic CP subj's. Treatment group n=21, control group n=22.	Neuro-muscular scoliosis	
Minkel J	2000	Seating and mobility considerations for people with spinal cord injury.	Physical Therapy, 80: 701-709	Expert opinion. Consider wholistic model of treatment.	N/A	N/A	RF	Expert opinion ABSTRACT	ADL Mob	
Morgan RH Psaila JV Stone J Carolan G Woodcock JP	1991	Effects of postural change on common femoral artery volume flow, measured by duplex ultrasound, in normal subjects and patients with peripheral vascular disease	Biomed Eng	Regulatory peripheral vasoconstriction occurs in response to adoption of the erect posture. Mildly ischemic limbs are thought to exhibit near normal responses, but patients with rest pain show increases in blood flow on limb dependency. The results of the study showed significant differences between elevation dependency and standing flows. The rest pain group displayed characteristically different responses compared to normal subjects and claudicants for each postural change	Duplex ultrasound volume flowmetry is non-invasive and offers an excellent method of quantifying physiological changes.	1	GE	Orthostatic responses = 12 normal subjects(age 22-74) 16 patients (age 21-83) (median 48) with mild and severe peripheral vascular disease	Physiology influenced by posture	
Mulcahy,C Pountney, T Nelham, R Green, E Billington, G	1988	Adaptive Seating for Motor Handicap: Problems, a Solution, Assessment and Prescription	British Journal of Occupational Therapy 51 (10) pp347-352	Seating should actively contribute to postural development as children spend most of their day sitting and comparatively short times undertaking therapy. A description of assessment and implementation of postural management within the sitting position	Technical descriptors Chailey levels of sitting ability	4	MM	Descriptive study. Non randomised trials. Case study of 5 children	CP and seating	

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Murphy KP, Molnar GE, Lankasky K	2000	Employment and social issues in adults with cerebral palsy.	Arch Phys Med Rehabil	Survey of volunteer CP patient living independent lives. Employment correlates with cognition rather than physical disability – cites rehab tech as a factor.	N/A	5	RF	Non-random (self selected) cohort. n=101. ABSTRACT	ADL Mob	
Nelham RL, Mulchay CM, Poutney TE, Green EM, Billington GD	1988	Clinical Aspects of the Chailey Adaptaseat	J Biomed Eng 10(2) 175-8	Principal features of adaptaseat explained. Sitting levels described – Levels 2-7 contraindicate MSI – explained.	Case series, technical description	3	RF	Case study 26 yr male CP	CP & seating	
Noble CM, Heckmatt JZ, Dubowitz V & Silverman M	1986	Effects of posture and spinal bracing on respiratory function in neuromuscular disease	<u>Archives of Disease in Childhood</u> , 61: 178-181	Spinal bracing resulted in a significant reduction of 22% in the mean vital capacity.	Spinal brace	3	SM	16 children with neuromuscular impairment. Tested in and out of brace.	Neuro-muscular scoliosis	
Nwaobi O & Smith P	1986	Effect of adaptive seating on pulmonary function of children with cerebral palsy.	Dev Med Child Neurol 1986; 28:351-4	Adaptive seating improves pulmonary function of children with spastic cerebral palsy as measured by vital capacity, forced vital capacity, percent vital capacity, and expiratory time.	Supportive seating	2	ST	8 children Statistically significant results Study performed in ideal conditions.	CP & seating	
Nwaobi OM	1987	Seating orientations and upper extremity function in children with cerebral palsy	Phys Ther 76(8) 1209-12	Emphasises the import of body postion for U/L – extremity function in CP	Randomised concurrent cohort	2	RF	13 CP(8-13 yrs) spastic or athetoid diag. Tilted positions. Reaction times measured.	CP & seating	
Nwaobi OM, Hobson DA, Taylor SJ	1988	Mechanical and anatomic hip flexion angles on seating children with cerebral palsy	Arch Phys Med Rehabil 69(4) 265-7	Hip flexion angle of seated child is not described by back base subtended angle	Non randomised concurrent cohort	3	RF	6 normal & 12 CP. Compared anatomical Hip flexn ang and seatback-base ang. Diff between angs greater in CP.	CP & seating	

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Olafsson Y., Saraste H., & Al-Dabbagh Z.;	1999	Brace treatment in neuromuscular spine deformity	<u>Journal of Pediatric orthopaedic</u> May-June; 19(3), 376-379	60 percent reduction in pelvic obliquity in brace. 32 percent reduction in pelvic obliquity. Large number of patients discontinuing treatment due to problems with brace or curve progression.	Prefabricated thoracolumbosacral orthosis	5	SM	Range of neuromuscular diagnosis, n=90. Mean age =9 years. No control group.	Neuro-muscular scoliosis	
Ombini S Smit AA van Iesshout JJ Settels JJ Langewouters GJ Weiling W	2001	Mechanism underlying the impairment in orthostatic tolerance after nocturnal recumbency in patients with autonomic failure	Clin Sci (London)	In patients with neurogenic orthostatic hypotension, the impaired tolerance to standing in the morning is due to larger falls in stroke volume and cardiac output. Not only nocturnal polyuria, but also a redistribution of body fluid, are likely mechanisms underlying the pronounced decreases in stroke volume and cardiac output after prolonged recumbency at night.	A Port après device recorded finger BP. Beat-to-beat Bp, heart rate, stroke volume, cardiac output, total peripheral vascular resistance obtained by pulse contour analysis.	3	GE	N = 10 patients with neurogenic orthostatic hypotension (age 33-68)> 7 treated with fludrocortisone and/or sleeping 12° head tilt position.	Physiology influenced by posture	
Owange-Iraka JW Harrison A Warner JO	1984	Lung function in congenital and idiopathic scoliosis	Eur J Pediatr 142(3) 198-200	The given Cobb angle, the loss in vital capacity was approximately 15% greater in congenital scoliosis than idiopathic scoliosis.	Cobb angle > a measure of spinal angulations.	3	GE	The greater impairment of lung function in CS may be associated to rib deformity or to an underlying abnormality	Physiology influenced by posture	
Pauline Pope		Postural management and special seating	Neurological Physiotherapy	Successful outcome in terms of matching postural needs with lifestyle is dependent upon an in-depth understanding of problem development, comprehensive assessment, co-operative discussion and effort, judicious compromise and compliance with the recommendations.	A step-by-step approach to postural management.	4	GE	Gives a very important background basis to special seating	Physiology influenced by posture	

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Phelps WM	1957	Prevention of Acquired Dislocation of the hip in cerebral palsy.	The Journal of Bone and Joint Surgery April 1959; Vol 41-A, No 3: 440-448.	Early weight bearing using leg splints and a standing frame decreases the femoral-shaft angle and prevents acquired hip dislocation	Standing	5	ST	5 patients	CP & standing	
Pope PM, Bowes CE & Boothe E	1994	Postural control in sitting. The SAM system: Evaluation o use over three years.	Dev Med Child Neurol 36:241-252	If postural impairment is unattended (i.e. inability to balance and stabilise the body relative to the supporting surface) . . . the inevitable outcome is contracture, deformity and pressure sores. The children who appeared to benefit the most were those who spent the most time in the SAM.	Supportive seating	4	ST	9 subjects. no statistical analysis of results No controls Small sample Uncontrolled factors influencing outcome eg mood	CP & seating	
Poutney T, Green E, Gard P, Mandy A, Nelham R.	2000	Retrospective analysis of hip migration in CP.	Paper presented at the British Paed Neuro Assoc Conf, Jan '01.	Postural management interventions have an important role in prevention of hip dysplasia. Children using 24hr PM prior to hip subluxation maintained significantly more hip integrity than other groups.	Children with bilateral CP who had various postural management and surgical interventions to control hip deformity were studied using x-ray results.	1	JC	A total of 446 hip x-rays were measured. Divided into 3 groups for analysis. ABSTRACT	Paeds	

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Poutney TE, Cheek L, Green E, Mulcahy C & Nelham R.	1999	Content and Criterion Validation of the Chailey Levels of Ability	Physiotherapy, 85. 8. 410-416	This study has established content and criterion validity for the Chailey Levels of Ability to measure motor ability in children and young adults with motor impairment based on a normal model of developmental biomechanics.	An assessment measure.	N/A	JC	N=123 A validated measurement scale used to document stages of motor development in lying, sitting and standing.	CP Motor Ability	
Pump B Kamo T Gabrielsen A Norsk P	2001	Mechanisms of hypotensive effects of a posture change from seated to supine in humans	Acta Physiologica Scandinavia 171(4) 404-412.	The hydrostatic stimulation of carotid baroreceptors combined with some additional increase in arterial pulse pressure, which also stimulates aortic baroreceptors, accounts for more than half of the hypotensive response at heart level to a posture change from seated to supine.	Seated to supine were compared with those of water immersion to the xiphoid process and to the neck.	4	GE	N=8 males Unusual measure of the hypothesis that hydrostatic stimulation carotid baroreceptors pivotal to decrease mean arterial pressure at heart level in a posture change.	Physiology influenced by posture	

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Ramirez,N, Richards, B, Warren,P, & Williams, G.	1997	Complications after posterior spinal fusion in Duchenne Muscular Dystrophy	Journal of Paediatric Orthopaedics 17: 109-114	Although complications are common, the benefits realised DMD patients with scoliosis reinforce the benefits of surgical stabilisation	Posterior spinal surgery	3	M.M	A comprehensive report spanning all patients referred over a 13 year period. Contains quantitative and qualitative data JOURNAL	NeuMus	
Rauh R. Hemmerling TM Rest M Jacobi KE	2001	Influence of pneumopertoneum (PP) & patient positioning on respiratory system compliance.	Journal of Clinical Anaesthesia	Creation of PP at an IAP of 15mmHg reduced respiratory compliance, increased peak flow, mean airway pressures> quickly returned to normal after deflation. Head-down or head up position did not further alter those parameters.	10 female ASA physical status I & II patients scheduled for elective gynaecologic laparoscopy.	2	GE	Difficult to self analyse text	Physiology influenced by posture.	
Redford MD	1993	Seating and Wheeled mobility in the disabled elderly population	Archives of Physical Medicine Rehabilitation Vol 74 p877-885	Decubitus ulcer care comes at a very high price compared to the price of a better quality cushion or wheelchair	N/A Recommendations and considerations	N/A	CD	Addresses general issues re wheelchairs and seating	Elderly	
Reid Denise T Sochaniwsky Alex	1991	Effects of anterior-tipped seating on respiratory function of normal children and children with cerebral palsy	International Journal of Rehabilitation Research	The results of this study suggest that anterior tipped seats may cause an increased tidal volume and minute ventilation in children with cerebral palsy.	Respiratory inductance plethysmograph was used to measure to detect volume changes. Specially designed chair was used.	1	GE	A literature search was done prior to own measurements.	Physiology influenced by posture	
Rizzi P.A., Winter R.B., Lonstein J.E., Denis F., and Perra J.	1997	Adult spinal deformity and respiratory failure - Surgical results for 35 patients,	<u>Spine</u> , Nov, 22(21), 2517-2530.	For most subjects scoliosis correction was about 40 percent and there was an improvement in respiratory function. High surgical mortality rates when the vital capacity is less than 30 percent pre surgery.	Spinal fusion with instrumentation.	5	SM	N=35, various diagnosis (15 neuromuscular), severe scoliosis with respiratory insufficiency.	Neuro-muscular scoliosis	

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Romero S Martin C Hernandez L Arriero JM Benito N Gil J	1995	Effect of body position on gaseous exchange in patients with unilateral pleural effusion: influence of effusion volume	Respir Med	The objective was to evaluate the effect of lateral body position on gas exchange in patients with unilateral pleural effusion, No consistent relationship was found for alterations in arterial blood gas tensions, in different positions with the volume effusion.	Estimations made by a roentgenographic method & spirometric & plethysmographic values. Arterial blood gas tensions were randomly measured in both right and left decubitus body positions, while breathing room air.	1	GE	N = 30 consecutive patients with unilateral pleural effusion, without evidence of parenchymal pulmonary involvement. I had difficulty in evaluating/under standing the results	Physiology influenced by posture	
Ross J Gamble J Schultz A Lewiston N Division of ped Orthopaedic surgery. Palo Alto.	1987	Back pain and spinal deformity in cystic fibrosis	Am J Dis Child 141 (12) 1313-6	Patients with CF showed decreased muscle strength + mobility in trunk, chest, & shoulders. Incidence of structural kyphosis was only 8.7%, but many had vertebral wedging. Much of the back pain may be due to postural abnormalities or vertebral wedging, not fixed kyphosis.	Pop of Surgery was studied by a questionnaire, an orthopaedic evaluation & survey chest roentgenograms.	1	GE	N= 47 with CF + 7 controls.	Physiology influenced by posture/ or visa versa	
Roxborough L	1995	Review of the efficacy and effectiveness of adaptive seating for children with cerebral palsy.	Assistive Technology 1995; Vol7:17-25	Some forms of adaptive seating improves (in the short-term) pulmonary function, active trunk extension, and test performance on the Bayley Mental Scale. Some forms of seating have been found to have no effect on reach. Some forms of adaptive seating, when used over a longer period, may be effective in improving sitting posture, vocalisation, and some oral motor eating skills in young children with cerebral palsy.	Supportive seating	N/A	ST	Literature review of 37 articles. 8 papers fulfilled selection criteria Sackett's levels of evidence and grades used to support clinical recommendations.	CP & seating	

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Sclaich C Minne HW Bruckner T Wagner G Gebest HJ Grunze m Zeigler R Leidig- Bruckner G	1988	Reduced pulmonary function in patients with spinal osteoporosis	Osteoporosis Int 8(3) 261-7	Pulmonary function is significantly diminished in patients with osteoporotic fractures as compared with patients with chronic low back pain without evidence of manifest osteoporosis. Reduction of pulmonary function is correlated significantly with clinical and radiological measures of severity of spinal deformation due to osteoporotic fractures.	Measurements of pulmonary function tests were calculated as a percentage of the normal range adjusting for age, sex, and height using the equations for normal values EKGS.	1	GE	N=34 pts with spinal osteoporotic fractures N= 5 with chronic low back pain.	Physiology Influenced by posture.	
Scrutton D	1989	The early management of hips in cerebral palsy	Dev Med Child Neurol 1989; 31:108-116	Early postural management is a sine qua non.	Positioning	4	ST	Retrospective study of hip migration of 184 children with cp.	CP & seating	
Scrutton D	1991	The causes of developmental deformity and their implication for seating.	Prosthetics & Orthotics International 1991; 15: 199-202.	The position in which children with cerebral palsy are placed and their time these positions are maintained are important in preventing fixed and structural deformity of the hips).	Positioning	5	ST	Discusses cause of hip displasia	CP & seating	
Seeger B and Sutherland A	1985	Lumbar extension in DMD: Effect on lateral curvature	Arch Phys Med Rehabil vol 66 April 1985 p236 -238	The authors look at the use of a lumbar pad to help prevent scoliosis	Seating	3	M.M	Non conclusive study JOURNAL	NeuMus	
Seeger B, Sutherland A, Clark M.	1984	Orthotic management of scoliosis in DMD	Arch Phys Med Rehabil vol 65 Feb 1984 p83-86	A review of orthosis and seating systems which show that seating systems do not help prevent scoliosis	Orthotics	3	M.M	Technology has moved on but a good report JOURNAL	NeuMus	

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Seeger B.R., Sutherland A.D. & Clark M.S.;	1984	Orthotic management of scoliosis in Duchenne Muscular dystrophy;	<u>Arch Phys Med Rehabil</u> ; Feb; 65: 83-86	Between 14-16 years old, no difference in the average Cobb angle for boys who had been using modular seating, spinal orthosis, standard wheelchair. Average Cobb angle for boys in the spinal jacket was significantly lower than that for boys in the moulded seating.	4 alternative treatments: modular seating, custom moulded seat, spinal orthosis, standard wheelchair.	3	SM	Duchenne muscular dystrophy subjects, n=24. allocated to groups according to judgement of particular clinician.	Neuro-muscular scoliosis	
Shaw G, Taylor SJ.	1991	A Survey of Wheelchair seating problems of the institutionalized elderly	Assistive Technology (3) p5-10	53 residents sat with poor posture most frequent postural problems included sliding forward, leaning to the side or a combination.	Questionnaire to 200 randomly selected non-ambulatory elderly residents	N/A	CD	Results indicated that many elderly nursing home residents have seating and mobility problems	Elderly	
Sheehan, J	1993	Scoliosis	The Search Winter 1993 13-16	An overview of PT and Orthotics	Stretches, passive movements and spinal jackets, A.F.O's	5	M.M	Authors experiences MD Campaign periodical	NeuMus	
Siegel, IM	1978	The management of muscular dystrophy: a clinical review	Muscle Nerve Nov – Dec 1(6): 453-60	Physical therapy can augment strength through exercise and relieve contracture through passive stretching. Looks at physio and orthopaedic techniques	A review of current treatment available (surgery, PT and OT)	3	M.M	Essentially a lit review JOURNAL	NeuMus	
Silverman, M	1986	Commercial options for positioning the client with MD	Clinical Prosthetics and Orthotics Vol10 No4 pp159-70	An overview of available seating systems		5	M.M	Many more systems are now available although this was the only paper of its kind JOURNAL	NeuMus	

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Sipinkova I Hahn G Meyer M Tadlanek M Hajek J	1997	Effect of respiration and posture on heart rate variability	Physiological Research Vol 46(3) (pp 173-179)	Analysis in the frequency domain revealed that the activity of the autonomic components controlling heart rate was modified by ventilation and postural changes. Entropy (measure of the complexity and integrity of cardiac control) was almost unaffected by respiration and posture.	Time series of instantaneous beat-beat heart rate was evaluated by spectral analysis, and by dimensionless approximate entropy	3	GE	N= 7 healthy subjects. It aimed to analyse the effects of posture and breathing frequency on the cardiac control system by various non-invasive techniques(not too conclusive)	Physiology influenced by posture	
Sipinkova I Hahn G Meyer M Tadlanek M Hajek J	1997	Effect of respiration and posture on heart rate variability	Physiological Research Vol 46(3) (pp 173-179)	Analysis in the frequency domain revealed that the autonomic components of heart rate was modified by ventilation and postural changes, whereas approx. entropy(unique measure of complexity/integrity of cardiac control system) was unaffected by respiration/posture.	Non invasive measurement techniques.in supine/sitting.	3	GE	N= 7 healthy subjects. Feel repeat studies need be made.	Physiology influenced by posture	
Stanley G Verotta D Craft N Siegal RA Schwartz JB	1997	Age effects on interrelationships between lung volume and heart rate during standing	American Journal of Physiology-Heart & circulatory Physiology. Vol 273(542-5) (ppH218-H134)	Respiration and respiration HR interrelationship are altered by age, with increased time delays between lung volume and HR and altered relationships with standing.	Lung volume/ HR power spectra/ transfer functions /lung vol/HR were estimated in supine/standing	3	GE	N= 7 young N= 10 old healthy humans	Physiology influenced by posture.	

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Stewart S, Neyerli-Beale J	1999	Enhancing Independence in children with cerebral palsy	British Journal of Therapy and Rehabilitation	"OT" interventions enable CP children to improve independence levels Measured CDI post OT sig higher. Equipment enables...		4	RF	Looked at OT intervention, n=16 pre & post outcomes using Community Dependence Index & Canadian Occupational Performance Measure: handling, stairs, seating, toilet mods, major adaptations, alt. accomodation	ADL	
Stinnett KA	1997	Geriatric seating and positionning within a wheeled mobility frame of reference in the long term care setting.	Topics in Geriatric Rehabilitation 13 (2) p75-84	Over a lifetime, the older adult has usually acquired a number of musculoskeletal limitations that affect sitting posture in a wheelchair	Advice on total seating and positioning assessment	N/A	CD	General considerations	Elderly	
Stuberg W	1992	Considerations Related to Weight-Bearing Programs in Children with Developmental Disabilities.	Physical Therapy / vol 72 No.1 Jan	A standing programme refers to the use of orthosis or adaptive equipment to position a child in standing when motor control is inadequate to allow standing without such devices.	Physiotherapy management using standing devices for children older than 14-16 months who have limited mobility.	N / A	JC	An examination of some evidence with emphasis on bone development. Guidelines for the use of standing programmes.	Paeds	
Sussman M.D., Little D., Alley R.M., & McCoig J.A.;	1996	Posterior Instrumentation and fusion and the thoracolumbar spine for treatment neuromuscular scoliosis	<u>J Pediatric Orthopaedics</u> ; June; 16(3): 304-313	48 percent Cobb angle correction; 49 percent pelvic obliquity correction.	Spinal fusion with posterior Luque instrumentation to L5.	5	SM	Various neuromuscular diagnosis. N=25, Cobb angle 67°, pelvic obliquiy 16°.	Neuro-muscular scoliosis	

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Szeinberg A Canny GJ Rashed N Veneruso G Levison H	1988	Forced vital capacity and maximal respiratory pressures in patients with mild and moderate scoliosis	Pediatr Pulmonol 4(1) 8-12.	Results showed that induced FVC values do occur in patients with mild-moderate idiopathic scoliosis and suggest that these low FVC values can be attributed to rib cage deformity rather than to an inability to generate adequate inspiratory pressures.	Cobb angle 7.& maximal respiratory pressures were used	1	GE	N = 24 adolescent females with mild-moderate idiopathic scoliosis(10--60°) 38 age & sex matched controls	Physiology influenced by posture	
Takatak, DM; Bowker,P	1995	Lightweight modular knee-ankle-foot orthosis for DMD: design, development and evaluation	Arch Phys Med Rehabil Dec 76 (12) 1156-62	Modular KAFO's provided a 23% weightsaving resulting in a 10% energy saving during ambulation and an 8% increase in walking speed	Orthotics	2	M.M	Pilot study – comparative design JOURNAL	NeuMus	
Tangsrud S.E., Carlsen K.C.-Lødrup, Lund-Petersen I, Carlsen K-H.	2001	Lung function measurements in young children with spinal muscular atrophy; a cross sectional survey on the effects of position and bracing	<u>Archives of Disease in Childhood</u> , June; 84(6): 521-524	Significant reduction in tidal expiratory volume with brace usage.	Lightweight rigid polypropylene brace.	3	SM	Children under 8 years with spinal muscular atrophy type 1 or II. N=5.	Neuro-muscular scoliosis	
Taylor SJ	1987	Evaluating the client with physical disabilities for wheelchair seating.	American Journal of OT Vol 41(11) p711-716	In general the goals of seating are to minimize the effects of abnormal tone and reflexes, accommodate delay or prevent development or progression of orthopaedic deformities and provide comfort.	N/A Considerations when conducting OT seating asesments.	N/A	CD	General considerations	Elderly	
Terjesen T., Lange J.E., & Steen H.;	2000	Treatment of scoliosis with spinal bracing in quadriplegic cerebral palsy;	<u>Dev Med Child Neurol</u> ; Jul; 42(7): 448-454	Initial Cobb angle correction of 38 percent in brace. Decreases over time with prolonged brace usage. Rates of progression similar to those reported by Saito (1998) for untreated scoliosis.	Thoracolumbosacral orthosis.	5	SM	Spastic quadriplegic CP subjects. N=86. Average age 13.8 years. No control group.	Neuro-muscular scoliosis	

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Thom H	1991	Prevention of hip-joint dislocation in cerebral palsied children: management by specific wheelchair prescription.	Rehabilitation (Stuttg) 1991;30:109-115.	If a wheelchair is redesigned in an appropriate manner, that is, provided with an abduction seating orthosis, along with laterally repositioned footrests, it will in the majority of cases be possible to prevent the development of hip dislocation.	Use of seating orthosis.	5	ST	Descriptive German paper - Abstract in English	CP & seating	
Thompson, N, Fahal, I & Edwards, RHT	1995	Muscle Disorders in Childhood	Book Chapter 21 p255 – 267 ed Dubowitz, Pub Saunders ISBN0702014370	Surgery is recommended for scoliosis. AFO's and stretching can maintain ambulation for a further 2 years	Orthotic management tp maintain ambulation and physiotherapy tp maintain muscle length. No mention of special seating.	1	M.M	Although this chapter gives an excellent overall view of neuromuscular disorders, there is only a small section on postural management derived largely from Orthoses and physiotherapy	NeuMus Book. I need to go back to the library to find which book this article came from	
Upadhyay SS Mullaji AB Luk KD Leong JC	1995	Relation of spinal and thoracic cage deformities and their flexibilities with altered pulmonary functions in adolescent idiopathic scoliosis.	Spine 20(22) 2415-20	Deformities in coronal & transverse plane influence changes in pulmonary functions expressed as the % of predicted values, whereas sagittal plane deformities mainly absolute volumes in which residual volume is a component.	Radiographic measurements. Pulmonary function > computerized Gould 5000V.	1	GE	N= 70pts (average age 13.8 yrs).	Physiology influenced by posture.	
Van der Woude L Veeger HEJ Rozendal RH Koperdraat J Drexhage D	1990	Seat height in hand rim wheelchair propulsion. A follow up study.	Journal of Rehabilitation Sciences.	Results indicated that an optimum seat height in terms of energy cost for basketball and daily use wheelchairs is in the range of 100°>120° of standardized elbow angle. I.e. wheel chair subjects with different levels of function	The effect of varying seat height on cardio-respiratory responses and propulsion technique parameters were studied. Treadmill/stationary	4	GE	N=5 More case studies needed.	Physiology influenced by posture	

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Viliani T Paswueti P Magnolfi F Lunardelli ML Goirgio C Serra P Tait PG	1999	Effects of physical training On straightening up processes in pa with Parkinson's Disease.	Disabil Rehab Feb; 21(2) : 68-73	Evaluate motor training to improve the straightening up process in pa with Parkinson Disease and their ability to change body position.	Physiotherapy	4 or 5?	K M	N=20 Idiopathic Park. Dis. Comparison pre And post intervention.	ADL	
Walter JS Sola PG Sacks J Lucero Y Langhein E Weaver F	1999	Indications for a home standing program for individuals with spinal cord injury	Spinal Cord Med Fall; 22(3); 152-8	Analysis of SCI pa. who used standing mobility aids and the improvement in quality of life.	Use of standing frame on a daily or weekly basis.	5	K M	N=99 comparison between those who stood daily and those who stood less.	Postural Managem ent	
Westerlund L.E., Sanjitpal S., Jarosz T.S., Abel MF & Blanco JS;	2001	Posterior-Only Unit Rod Instrumentation and Fusion for Neuromuscular scoliosis.	<u>Spine</u> ; September; 26(18); 1984- 1989.	66 percent Cobb angle correction; 74 percent pelvic obliquity correction.	Posterior-Only Unit Rod Instrumentation and Fusion	5	SM	Various neuromuscular diagnosis. N=28, Cobb angle 69° , pelvic obliquiy 20.5°	Neuro- muscular scoliosis	
Widhe T	2001	Spine: posture, mobility and pain. A longitudinal study from childhood to adolescence.	Eur Spine J, 10 (2): 118-23	Trend to increase in kyphosis and lordosis from childhood to adolescence.	N/A	3	RF	Questionnaire and interview- based longitudinal research. n=90 ABSTRACT	ADL Mob	
Williams EA, Read L, Ellis A, Morris P, Galasko CS	1984	The management of equines deformity in DMD	J Bone Joint Surg Br Aug 66(4) 546-50	Surgical intervention provided the best long term benefit despite recurrence	Surgery	3	M.M .	Comparative study using 69 patients JOURNAL	NeuMus	