



NIHS RESIDENCY TRAINING PROGRAM

Orthodontics and Dentofacial Orthopedics

Final Written Examination

Examination Format:

National Institute for Health Specialties NIHS (Emirate Board) final specialty written examination shall consist of two papers each with 100-125 Single Best Answer MCQs. Up to 10 % unscored items can be added for pretesting purposes.

Passing Score:

The pass mark in the Final Written Examination will be determined according to the scientific standards and based on reliable practices in assessment.



Suggested References:

TEXT BOOKS:

1. Proffit WR. CONTEMPORARY ORTHODONTICS. 6th edition, St. Louis, MO, USA, Mosby, Inc., 2018.
2. Radiographic cephalometry from basics to 3-D imaging, Alexander Jacobson, Richard Jacobson , 2nd Edition.
3. Orthodontics Current principals and techniques, Graber, Vanarsdall, and Vig, 5th Edition.
4. Several articles as illustrated in the blueprint “attached examples”.

LITERATURE:

Growth and development:

1. Thilander B. Basic mechanisms in craniofacial growth. Acta Odontol Scand 53(3):144-151, 1995.
2. Bjork, A. Prediction of Mandibular Rotation. Am. J. Orthod. 55: 585-599, 1969.
3. Dager MM, McNamara JA, Baccetti T, Franchi L. Aging in the craniofacial complex. Angle Orthod 78(3):440-444, 2008.
4. Pecora NG, Baccetti T, McNamara JA Jr. The aging craniofacial complex: a longitudinal cephalometric study from late adolescence to late adulthood. Am J Orthod Dentofacial Orthop 134(4):496-505, 2008.
5. Ranly DM. Craniofacial growth. Dent Clin North Am 44(3):457-470, 2010.
6. Mossey PA. The heritability of malocclusion: part 2. The influence of genetics in malocclusion. Br J Orthod 26(3):195-203, 1999.
7. Derya Germec Cakan, Feyza Ulkur, and Tulin (Uğur) Taner The genetic basis of facial skeletal characteristics and its relation with orthodontics Eur J Dent. 2012 July; 6(3): 340–345.



8. Wishney, M., Darendeliler, M., & Dalci, O. (2018). Craniofacial growth studies in orthodontic research-lessons, considerations and controversies. *Australasian Orthodontic Journal*, 34(1), 61
9. Thilander, B. (2017). Craniofacial growth and development. *Essential Orthodontics*, 30, 25. ""BOOK""
10. Wishney, M., Darendeliler, M., & Dalci, O. (2018). Craniofacial growth studies in orthodontic research-lessons, considerations and controversies. *Australasian Orthodontic Journal*, 34(1), 61.



Orthodontic Diagnosis and Treatment Planning:

1. Doppel DM, Damon WM, Joondeph DR, Little RM. An investigation of maxillary superimposition techniques using metallic implants. Am J Orthod Dentofacial Orthop. 1994 Feb;105(2):161-8.
2. Nielsen IL. Maxillary superimposition: a comparison of three methods for cephalometric evaluation of growth and treatment change. Am J Orthod Dentofacial Orthop. 1989 May;95(5):422-31.
3. Naini FB, Gill DS. Facial aesthetics: 2. Clinical assessment. Dent Update 35(3):159-162, 164-166, 169-170, 2008.
4. Bishara SE, Burkey PS, Kharouf JG. Dental and facial asymmetries: a review. Angle Orthod 64(2):89-98, 1994.
5. Charles J. Burstone. Diagnosis and treatment planning of patients with asymmetries. Semin Orthod 4(3):153-164, 1998.
6. Janson, G., de Lima, K. J. R. S., Woodside, D. G., Metaxas, A., de Freitas, M. R., & Henriques, J. F. C. (2007). Class II subdivision malocclusion types and evaluation of their asymmetries. American journal of orthodontics and dentofacial orthopedics, 131(1), 57-66.
7. Nguyen, T., Cevitanes, L., Franchi, L., Ruellas, A., & Jackson, T. (2018). Three-dimensional mandibular regional superimposition in growing patients. American Journal of Orthodontics and Dentofacial Orthopedics, 153(5), 747-754.
8. Kouvelis G, Dritsas K, Doulis I, Kloukos D, Gkantidis N. Effect of orthodontic treatment with 4 premolar extractions compared with nonextraction treatment on the vertical dimension of the face: A systematic review. Am J Orthod Dentofacial Orthop. 2018 Aug;154(2):175-187.



Growth Modification:

1. Cozza P, Baccetti T, Franchi L, De Toffol L, McNamara JA. Mandibular changes produced by functional appliances in Class II malocclusion: a systematic review. Am J Orthod Dentofacial Orthop 129(5):599, e1-12, 2006.
2. Brosh T, Portal S, Sarne O, Vardimon AD. Unequal outer and inner bow configurations: comparing 2 asymmetric headgear systems. Am J Orthod Dentofacial Orthop 128(1):68-75, 2005.
3. Mandall, N., Cousley, R., DiBiase, A., Dyer, F., Littlewood, S., Mattick, R., & Shargill, I. (2016). Early class III protraction facemask treatment reduces the need for orthognathic surgery: a multi-centre, two-arm parallel randomized, controlled trial. Journal of orthodontics, 43(3), 164-175.

Treatment Modalities:

1. Marshall SD, Southard KA, Southard TE. Early Transverse Treatment. Semin Orthod 11(3):130-139, 2005.
2. Eustáquio A. Araújo. Diagnostic Protocol In Cases Of Congenitally Missing Maxillary Lateral Incisors. World J Orthod 2006;7:376–388.
3. Bills DA, Handelman CS, BeGole EA. Bimaxillary dentoalveolar protrusion: traits and orthodontic correction. Angle Orthod 75(3):333- 339, 2005.
4. Kokich VG. Surgical and orthodontic management of impacted maxillary canines. Am J Orthod Dentofacial Orthop 126:278-283, 2004.
5. Andrew Schmidt, Vincent Kokich, Peridental response to early uncovering autonomous eruption, and orthodontic alignment of palatally impacted maxillary canines. Am J Orthod Dentofacial Orthop 2007; 131:449-55



6. Elliott M. Moskowitz, Ronniette C. Garcia, The management of palatally displaced maxillary canines: Considerations and challenges. *Semin Orthod* 2014;20:46-58.
7. Vaden JL, Pearson LE. Diagnosis of the vertical dimension. *Semin Orthod* 8(3):120-129, 2002.
8. Turley PK. Orthodontic management of the short face patient. *Semin Orthod* 2(2):138-153, 1996.
9. Budi Kusnoto and BernardJ. Schneider. Control of the Vertical Dimension. *Semin Orthod* 2000;6:33-42
10. Thomas J Cangialosi, Skeletal Morphologic features of anterior open bite. *Am J Orthod Dentofacial Orthop* 1984; 85:28-36.
11. [Lagravere MO](#), [Major PW](#), [Flores-Mir C](#). Long-term dental arch changes after rapid maxillary expansion treatment: a systematic review. *Angle Orthod* 75(2):155-161, 2005.
12. Ghoneima A, Abdel-Fattah E, Hartsfield J, et al: Effects of rapid maxillary expansion on the cranial and circummaxillary sutures. *American Journal of Orthodontics and Dentofacial Orthopedics* 140(4):510-519, October 2011.
13. Suri L, Taneja P. Surgically assisted rapid palatal expansion: a literature review. *Am J Orthod Dentofacial Orthop*. 2008 Feb;133(2):290-302.
14. [Andrews LF](#). The six keys to normal occlusion. *Am J Orthod Dentofacial Orthop* 62(3):296-309, 1972.
15. Rinchuse DJ, Kandasamy S, Sciote J. A contemporary and evidence- based view of canine protected occlusion. *Am J Orthod Dentofacial Orthop*. 2007 Jul;132(1):90-102.
16. Donald J. Rinchuse, and Jeffrey T. McMinn, Summary of evidence- based systematic reviews of temporomandibular disorders. *Am J Orthod Dentofacial Orthop* 2006;130:715-20
17. Jeffrey P. Okeson. Evolution of occlusion and temporomandibular disorder in orthodontics: Past, present, and future. *Am J Orthod Dentofacial Orthop* 2015;147:S216-23)
18. Tsolakis AI, Kalavritinos M, Bitsanis E, et al: Reliability of different radiographic methods for the localization of displaced maxillary canines. *American Journal of Orthodontics and Dentofacial Orthopedics* 153(2):308-314, February 2018
19. Sadowsky, C., & Polson, A. M. (1984). Temporomandibular disorders and functional occlusion after orthodontic treatment: results of two long-term studies. *American journal of orthodontics*, 86(5), 386-390





Retention and Stability:

1. Janson, G., Araki, J., Estelita, S., & Camardella, L. T. (2014). Stability of class II subdivision malocclusion treatment with 3 and 4 premolar extractions. *Progress in orthodontics*, 15(1), 67.
2. Zachrisson BU. Important aspects of long-term stability. *J Clin Orthod* 31(9):562-583, 1997.
3. Melrose C, Millett DT. Toward a perspective on orthodontic retention? *Am J Orthod Dentofacial Orthop*. 1998 May;113(5):507-14.
4. Little RM. Stability and relapse of dental arch alignment. *Br J Orthod* 17(3):235-241, 1990.
5. Bishara SE. Third molars: a dilemma! Or is it? *Am J Orthod Dentofacial Orthop* 115(6):628-633, 1999.

Comprehensive Treatment in Adolescents and Preadolescent:

1. Marshall SD, Southard KA, Southard TE. Early Transverse Treatment. *Semin Orthod* 11(3):130-139, 2005.
2. Pinto, A. S., Buschang, P. H., Throckmorton, G. S., & Chen, P. (2001). Morphological and positional asymmetries of young children with functional unilateral posterior crossbite. *American Journal of Orthodontics and Dentofacial Orthopedics*, 120(5), 513-520.
3. Tulloch JFC, Proffit WR, Phillips C: Influences on the outcome of early treatment for Class II malocclusion. *American Journal of Orthodontics and Dentofacial Orthopedics* 111(5):533-542, May 1997.
4. Tulloch JFC, Proffit WR, Phillips C: Outcomes in a 2-phase randomized clinical trial of early class II treatment. *American Journal of Orthodontics and Dentofacial Orthopedics* 125(6):657- 667, June 2004.





5. Mucedero, M., Fusaroli, D., Franchi, L., Pavoni, C., Cozza, P., & Lione, R. (2018). Long-term evaluation of rapid maxillary expansion and bite- block therapy in open bite growing subjects: A controlled clinical study. *The Angle Orthodontist*
6. Ferro, F., Funicello, G., Perillo, L., & Chiodini, P. (2011). Mandibular lip bumper treatment and second molar eruption disturbances. *American Journal of Orthodontics and Dentofacial Orthopedics*, 139(5), 622-627.

Adult Orthodontics:

1. Sabri R. Orthodontic objectives in orthognathic surgery: state of the art today. *World J Orthod* 7(2):177-191, 2006.
2. Bailey LJ, Cevidan LH, Proffit WR. Stability and predictability of orthognathic surgery. *Am J Orthod Dentofacial Orthop* 126(3):273- 277, 2004.
3. Larry M. Wolford, Spiro C. Karras, and Pushkar Mehra, Considerations for orthognathic surgery during growth, Part 1: Mandibular deformities. *Am J Orthod Dentofacial Orthop* 2001;119:95-101.
4. Hamilton RS, Gutmann JL. Endodontic-orthodontic relationships: a review of integrated treatment planning challenges. *Int Endod J* 32(5):343-360, 1999.
5. Kokich VG, Spear FM. Guidelines for managing the orthodontic- restorative patients. *Semin Orthod* 3(1):3-20, 1997.
6. Mathews DP, Kokich VG. Managing treatment for the orthodontic patient with periodontal problems. *Semin Orthod* 3(1):21-38, 1997.

Clinical Orthodontics:

1. Theodosia Bartzela, Jens C. Türp, Edith Motschall, and Jaap C. Maltha. Medication effects on the rate of orthodontic tooth movement: A systematic literature review. *Am J Orthod Dentofacial Orthop* 2009;135:16-26.





2. Kolokitha OE, Chatzistavrou E. Allergic reactions to nickel-containing orthodontic appliances: clinical signs and treatment alternatives. *World J Orthod.* 2008 Winter;9(4):399-406.
3. Kindelan SA, Day PF, Kindelan JD, Spencer JR, Duggal MS. Dental trauma: an overview of its influence on the management of orthodontic treatment. Part 1. *J Orthod.* 2008 Jun;35(2):68-78.
4. Anthony J Diangelis, Jens O Andreasen, Kurt A Ebeleseder: International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 1. Fractures and luxations of permanent teeth. *Dental Traumatology* 28(1):2-12. Feb 2012
5. Monty Singh Duggal, Jay Kindelan, Hani Nazzal. Upper incisor trauma and the orthodontic patient—Principles of management. *Semin Orthod* 2015; 21:59–7
6. Patel A, Burden DJ, Sandler J. Medical disorders and orthodontics. *J Orthod.* 2009 Dec;36 Suppl:1-21. Review
7. Fleming PS, Strydom H, Katsaros C, MacDonald L, Curatolo M, Fudalej P, Pandis N. Non-pharmacological interventions for alleviating pain during orthodontic treatment. *Cochrane Database Syst Rev.* 2016 Dec 23;12(12).
8. Kerosuo, H., Kullaa, A., Kerosuo, E., Kanerva, L., & Hensten-Pettersen, A. (1996). Nickel allergy in adolescents in relation to orthodontic treatment and piercing of ears. *American journal of orthodontics and dentofacial orthopedics*, 109(2), 148-154.

Dentofacial Deformity:

1. Thornton J, Nimer S, Howard P. The incidence, classification, etiology, and embryology of oral clefts. *Semin Orthod* 2(3):162-168, 1996.
2. Evans CA. Orthodontic treatment for patients with clefts. *Clin Plast Surg* 31(2):271-290, 2004.
3. Katherine W. L. Vig and Ana M. Mercado. Overview of orthodontic care for children with cleft lip and palate, 1915-2015, *Am J Orthod Dentofacial Orthop* 2015;148:543-56).





4. Bergland, O., Semb, G., & Abyholm, F. E. (1986). Elimination of the residual alveolar cleft by secondary bone grafting and subsequent orthodontic treatment. *The Cleft palate journal*, 23(3), 175-205.

Biomechanics and Contemporary Orthodontic Appliance:

1. Isaacson RJ, Lindauer SJ, Davidovitch M. The ground rules for arch wire design. *Semin Orthod* 1(1):3-11, 1995.
2. Charles J. Burstone. Biomechanics of deep overbite correction. *Semin Orthod* 7(1):26-33, 2001.
3. Edsard van Steenberg, and Ravindra Nanda, Biomechanics of Orthodontic correction of dental asymmetries, *Am J Orthod Dentoface Orthop*, 1995;107:618-24
4. Park HS, Jeong SH, Kwon OW. Factors affecting the clinical success of screw implants used as orthodontic anchorage. *Am J Orthod Dentofacial Orthop*. 2006 Jul;130(1):18-25.
5. Yan Chen, Hee Moon Kyung, Wen Ting Zhao, and Won Jae Yu, Critical factors for the success of orthodontic mini-implants: A systematic review. *Am J Orthod Dentofacial Orthop* 2009;135:284-91

Professionalism and Ethics:

1. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
2. Essentials of Patient Safety, SCHS, Latest Edition.

Note:

This list is intended for use as a study aid only. NIHS does not intend the list to imply endorsement of these specific references, nor are the exam questions necessarily taken solely from these sources.





Blueprint Outlines:

No.	Sections	Percentage
1	Growth and Development	7%
2	Orthodontic Diagnosis and Treatment Planning	10%
3	Growth Modification	10%
3	Treatment Modalities	17%
5	Retention and Stability	7%
6	Comprehensive Treatment in Adolescents and Preadolescent	12%
7	Adult Orthodontics	10%
8	Clinical Orthodontics	10%
9	Dentofacial Deformity	5%
10	Biomechanics and Contemporary Orthodontic Appliance	12%
Total		100%

Notes:

- Blueprint distributions of the examination may differ up to +/-5% in each category.
- Percentages and content are subject to change at any time. See the website for the most up-to-date information.
- Research, Ethics, Professionalism, and Patient Safety are incorporated within various domains.

