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Translation and cross-cultural adaptation of the protocol of orofacial myofunctional evaluation with scores for Italian Language

Tradução e adaptação transcultural do protocolo de avaliação miofuncional orofacial com escores para a Língua Italiana

ABSTRACT

The protocol of orofacial myofunctional evaluation with scores (OMES-protocol or AMIOFE in Portuguese language) is a validated instrument for the diagnosis of orofacial myofunctional disorders that can be used in clinical practice for speech–language pathologists. Because in the Italian language there is no validated tool for such purpose, this study was developed. **Purposes:** To translate and culturally adapt the OMES-protocol for Italian language and determine the normal score value in a group of young Italian adults. **Methods:** The OMES-protocol was translated from English to Italian by three bilingual individuals. From these translations, a consensus version was prepared by a research committee (three speech therapists and one physician and submitted to a committee of judges composed by eight speech therapists experienced in the area. The authors of the original version verified and approved the Italian version of the protocol. The instrument was tested via evaluations of 40 young and grown-up Italians (age range: 18–56 years) performed by two speech therapists. A cutoff score, previously described, was used to determine the mean and standard deviation. **Results:** The translation stage and the final Italian version of the OMES-protocol are shown. The mean of scores for individuals with and without orofacial myofunctional disorders were presented. **Conclusion:** The Italian version of the OMES-protocol was developed, translated, and cross-culturally adapted. Normal values for young and adult Italian subjects are presented.

RESUMO

O protocolo de avaliação miofuncional orofacial com escores (protocolo AMIOFE) é um instrumento validado para o diagnóstico de distúrbios miofuncionais orofaciais que pode ser utilizado por fonoaudiólogos em sua prática clínica. O presente estudo foi desenvolvido porque não há um instrumento validado para esta finalidade em língua Italiana. **Objetivos:** traduzir e realizar a adaptação transcultural do protocolo AMIOFE para a língua italiana e determinar os valores dos escores de normalidade em um grupo de jovens e adultos italianos. **Métodos:** o protocolo AMIOFE foi traduzido da língua inglesa para a italiana por três indivíduos bilíngues. A partir dessas traduções, uma versão de consenso foi preparada por um comitê de pesquisa (três fonoaudiólogos e um médico) e submetida a um comitê de juízes, composto por oito fonoaudiólogos italianos experientes na área. Os autores da versão original verificaram e aprovaram a versão italiana do protocolo. O instrumento foi testado por meio de avaliações de 40 sujeitos italianos jovens e adultos (faixa etária entre 18 e 56 anos de idade), realizadas por dois fonoaudiólogos. O ponto de corte, previamente descrito, foi usado para determinar as médias e desvios-padrão. **Resultados:** a etapa de tradução e a versão final da versão italiana do protocolo AMIOFE foram apresentadas, bem como as médias dos escores para os sujeitos com e sem distúrbio miofuncional orofacial. **Conclusão:** a versão italiana do protocolo AMIOFE foi desenvolvida, traduzida e adaptada transculturalmente. Valores de normalidade para sujeitos italianos jovens e adultos foram apresentados.

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Conflict of interests: nothing to declare.

INTRODUCTION

The stomatognathic system is responsible for complex functions such as speaking, chewing, swallowing, breathing, sucking, smiling, and kissing. Several factors may adversely affect these functions, which show biopsychosocial relevance⁽¹⁻³⁾. A collective term for the alterations in the orofacial muscles and the stomatognathic functions is orofacial myofunctional disorders (OMD)⁽⁴⁾, which encompasses “any pattern involving the oral and/or orofacial muscles that interfere in the growth, development, or functions of the structures, or draws the attention to oneself”⁽⁵⁾.

The OMDs are common in cases of malocclusion⁽⁶⁾, adenoid and tonsillar hypertrophy⁽⁷⁾, mouth breathing⁽⁸⁾, temporomandibular disorders⁽³⁾, and obstructive sleep apnea⁽⁹⁾ and they may occur at any age as a consequence of acquired or degenerative diseases⁽³⁾.

Lately, objective measures such as strength of the lips, tongue or bite, chewing efficiency, electromyography, and ultrasound have helped for a better comprehension of the problems affecting the stomatognathic system^(10,11). However, the clinical evaluation is considered essential for the diagnosis of OMDs^(3,11-13).

A thorough research in the literature revealed that there is no instrument in Italian for the evaluation of the orofacial structures and functions, which may allow the examiners to express their perception of the physical and behavioral orofacial characteristics through numerical scales, at least at ordinal measure level. This fact motivated the performing of the transcultural translation and adaptation of the Orofacial Myofunctional Evaluation with Scores (OMES) into Italian.

The OMES protocol was previously developed to be a low cost instrument and easy to use during the evaluation of the structures and functions of the stomatognathic system⁽¹⁴⁾. It was validated for children from 6 to 12 years of age⁽¹⁴⁾ and for adults⁽³⁾, with good psychometric properties.

This protocol allows the determination of normality values, for healthy adult subjects^(4,15,16), of myofunctional orofacial characteristics of the patients⁽¹⁷⁾, of the differences between patients and healthy subjects^(3,11), or of patients with different results of treatments and intervention effects^(3,18). In addition, significant relationship between the OMES protocol and the electromyographic values were previously presented⁽⁴⁾.

The term “transcultural adaptation” is used for an extensive process, which analyzes both the language (translation) and the matters of cultural adaptation of the instrument for use in another context, as in another country, culture and/or language, favoring its possible use in a language other than the original one⁽¹⁹⁾.

In order to achieve these goals, it is necessary to use an appropriate methodology, with the following steps: initial translation into the target language, reconciliation (consensus version), back translation, and pilot test (testing of the instrument)^(20,21).

When people from different contexts notice an aspect in a similar way, it is possible to assume that, in terms of content, the measure is transculturally valid⁽²²⁾. The transcultural adaptation of the existing instrument for new cultures presents several advantages in relation to the development of a new

tool for the same purpose. For example, it allows the comparison of different populations and the exchange of information without the bias of cultural and language barriers⁽²³⁾. At the moment, there is a growing interest in the validation of scales for the Italian language/population in relation to the communication disorders and the functions involving the stomatognathic system^(24,25).

Thus, the objective of this study was to translate and transculturally adapt the OMES protocol into Italian, including the pilot test of the instrument and the description of the normality values for young and adult Italian subjects.

METHODS

Before the participation, all the subjects and patients signed the Informed Consent. The data in this study were collected according to the Declaration of Helsinki and according to the norm of the Italian university where the research was carried out.

Because the authors of the OMES protocol took part in this study, the previous authorization for its translation and adaptation was not necessary.

OMES Protocol – Transcultural translation and adaptation

Initial Version

The version published in English of the OMES Protocol⁽¹⁴⁾ was translated into Italian. Three bilingual, native Italian speaker individuals performed independently the translations. Two of them were informed translators (i.e. Speech–Language and Audiology Pathologists), and one of them was a layman to the health problem investigated.

Consensus Version

All translated versions were evaluated by the research committee, consisting of three Speech–Language and Audiology Therapists and a Physician specialist in anatomy, with experience in the evaluation of the stomatognathic system. They verified that, after the translation of the instrument, each item had been kept for the culture of interest, considering the characteristics and discrepancies, which may reflect ambiguities⁽²⁶⁾. The consensus version was created aiming at semantic similarity.

Review by the expert committee

The consensus version was independently appreciated by eight Italian Speech–Language and Audiology Therapists, independently, experienced in orofacial myofunctional evaluation, but with no previous experience with the OMES Protocol. Opinions and suggestions were requested to the committee of experts and implemented when presented.

Back Translation

The consensus version of the protocol in Italian, including the suggestion of the committee of specialists, was then back translated into English by two bilingual evaluators. Later on, the research committee (consisting of three Speech–Language and Audiology Therapists and a Physician, as previously described) compared this version with the original instrument

for the methodology and grammar analysis and, thus, the final Italian version was then obtained.

Approval of authors

The final version of the OMES protocol in Italian was submitted to the authors of the protocol, who knew all the previous performed steps. Besides that, they are native speakers of Brazilian Portuguese, the first (original) language of the instrument (AMIOFE), and fluent speakers of Italian. Thus the protocol was approved for use.

Instrument testing

Subjects: 40 consecutive subjects took part in the testing of the instrument (16 men and 24 women, age range between 18 and 56 years, mean age=23.40, SD=7.93) who were willing to collaborate with the study. The volunteers, all native Italian speakers, were locals, students, and employees of the Italian university, who agreed to participate in the study after a detailed explanation of the methods and possible risk involved. Individuals with or without OMD were included, by several degrees of alteration, and the average patterns are necessary in order to build evaluation scales⁽¹⁴⁾.

Exclusion criteria: individuals with hearing loss; missing teeth, except third molars; mental retardation, neurological and emotional disorders, which prevented the accomplishment of the required tasks; with history of traumas or tumors in the head and neck regions; subject submitted to orofacial myofunctional therapy; and/or treatment for temporomandibular disorder were excluded.

The size of the sample was previously calculated in order to reject a null hypothesis (one-tailed test). Descriptive statistics previously obtained were used in order to estimate the minimum number of subjects required for the statistical analysis with a statistical power of 80% (type II error, *beta*) and with *alpha* (type I) of 5%. The numbers varied between 5 and 18, depending on the analyzed variable. Specifically, for the total score of the OMES protocol, the minimum number of subjects necessary was 13⁽³⁾.

Evaluations: the subjects were evaluated by a complemented visual analysis with the collection of photographic records and video images. During the evaluation sessions, the subjects remained sitting down in a chair with a support to the back, feet flat on the floor, in a standardized distance (1 m) from the lenses of the camera (Sony Handycam video-camera, Hi8/ ccd-TRV 138), set up on a tripod with the height adjusted for each individual, so that their face, neck, and chest could be recorded.

The methodology for the evaluation was the same from the original OMES protocol, according to the published previously articles^(3,14): the appearance/posture and mobility of the lips, tongue, face, cheeks, palate and jaw and the breathing, swallowing, and chewing functions were evaluated. The examiners expressed their perception on the components and functions according to the descriptions of the protocol and using the pre-determined scores. According to the protocol, the maximum scores were attributed to the normal patterns with no deviations. The total score of the OMES protocol was determined

by the sum of the partial scores (of each item); the total maximum score was 103 (Appendix I).

Examiners: two Speech–Language and Audiology Therapists (E1 and E2), both previously trained by the first author and graded in orofacial myofunctional evaluation, evaluated all 40 subjects. In order to establish the agreement for use of the protocol and/or interpretation, the examiners reassessed eight selected randomly subjects (20% of the sample). For these reassessments, they used the video records of each subject, which contained images recorded during 10 seconds of rest, used for the evaluation of the appearance and posture of the components of the stomatognathic system, and images of the tasks of mobility of the lips, tongue, cheeks and jaw and the usual breathing, swallowing, and chewing functions⁽¹⁴⁾, respectively, employed to evaluate the performance on the tasks.

Determination of the normality values: in order to determine the normality values present in the sample, the total OMES score (sum of the scores obtained in all items of the protocol) of each subject (n=40) was considered and the value of 88 was applied as a cutoff point⁽⁴⁾. Accordingly the subjects were divided into two groups: group with OMD, subjects with score <88; and groups without OMD, subjects with score ≥88.

The cutoff point adopted in this study was defined according to previous results of subjects with orofacial myofunctional disorders evaluated with the OMES (Total score: Mean ± Standard Deviation = 87.2±5.3; Median=87.5)⁽⁴⁾.

The total scores of the OMES protocol of the groups with and without OMD were compared through the nonparametric Mann-Whitney test. The analysis was performed using the MedCalc software (Mariakerke, Belgium, Version 11.0.1). The significance level adopted was 0.05.

RESULTS

Translation and transcultural adaptation process

The versions made by the three translators, both those by Speech–Language and Audiology Therapists and that made by the layman translator were very similar.

Difficulties were found for the translations of the some original terms of the English language such as “free-way space”, “overjet,” and “overbite”. According to the information coming from the committee of experts, these terms are often used in English by Italian health professionals, and that is why they were not translated. Since that the “dental free-way space” is the natural vertical space at rests between the mandibular and maxillary dental arches, this description was included.

By suggestion of the committee of specialists, in some items of the protocol, beyond the descriptions contained in the original version, properly translated and adapted, the description of the evaluation method of the mobility tests, the evaluation of overjet and overbite and the same terms themselves in English were introduced. This would help Italian professionals in the area, and reduce errors due to misinterpretation by new users.

The authors of the original protocol⁽¹⁴⁾ closely followed all phases of the study, giving out suggestions whenever necessary.

Care was taken by the authors for the maintenance of the initial objective of the protocol.

Instrument testing

The demographic characteristics of the sample are listed in Table 1, including the mean and standard deviation of the age of the subjects evaluated by the OMES protocol in Italian and the gender proportion. The mean of the scores of the subjects with and without OMD for each item and the total sum of the OMES protocol are in Table 2.

The ability of the OMES protocol in Italian to reflect the normal and altered orofacial myofunctional conditions was demonstrated by the significant difference observed between

Table 1. Distribution of the subjects evaluated with the Orofacial Myofunctional Evaluation with Scores protocol by gender and age (mean and standard deviation)

n=40	Frequency		Age (years)			
	Absolute	Relative (%)	Mean	SD	Min	Max
Men	16	40	23	7	19	47
Women	24	60	22	7	18	56

Caption: SD = standard deviation; Min = minimum; Max = maximum.

Table 2. Orofacial Myofunctional Evaluation with Scores. Age, maximum scores of the protocol, and mean (\pm standard deviation) of the scores of the groups

		Subjects without OMD		Subjects with OMD	
		(n=25; W=12; M=13)		(n=15; W=10; M=5)	
		Mean	SD	Mean	SD
Maximum scores of the protocol					
Age (years)		21.80	5.41	23.87	9.16
Appearance/posture					
Lips	3	2.76	0.44	2.73	0.46
Jaw	3	2.56	0.51	2.40	0.51
Cheeks	3	2.92	0.28	2.93	0.26
Face	3	2.20	0.58	1.73	0.59
Tongue	3	2.84	0.62	2.13	0.74
Palate	3	2.44	0.65	2.07	0.88
Mobility					
Lips	12	11.00	1.32	10.07	1.44
Tongue	18	14.92	2.18	11.73	1.94
Jaw	15	14.04	1.21	12.07	1.58
Cheeks	12	11.88	0.33	11.27	1.03
Function					
Breathing	3	2.96	0.20	2.80	0.41
Swallowing	15	14.16	1.21	12.80	1.42
Chewing	10	9.40	0.91	8.13	1.30
Total score	103	94.00	4.24	82.87	3,34

Caption: Maximum score = maximum score possible in the OMES protocol; SD = standard deviation; W = Women; M = Men; OMD = orofacial myofunctional disorders.

the groups with and without OMD for the total scores of the protocol ($p < 0.0001$).

Reliability and agreement of the evaluators: The Kappa coefficient (K_w) showed a strong intra- and interexaminer agreement, the reliability between E1 and E2 was 0.91, and the test-retest reliability coefficient (intraexaminer) were 0.92 and 0.89 for E1 and E2, respectively.

DISCUSSION

This study was developed considering the need of a valid instrument for the evaluation of OMDs in Italian, whose numerical scales were in ordinal levels of measurement. The results showed that the Italian version of the OMES protocol is adequate and appropriate for the evaluation of the morphological and functional characteristics of young and adult Italian subjects. In addition, during evaluation, the Italian subjects showed a good understanding of the requested tasks.

In order to fulfill the needs of the instrument with certain characteristics and properties in a given language, several authors suggest the translation of instruments available in other languages instead of creating new instruments. Since no clinical protocol should be applied directly in a language other than its original one, the transcultural translations and validation is necessary, because a simple translation does not take into account the linguistic and cultural characteristics^(19,26).

In order to produce a translated version equivalent to the original version of the instrument, specialized professionals who rigorously follow the methodology are necessary^(21,26-28). In this study, a rigorous methodology of transcultural adaptation was adopted, encompassing the translation, back translation, and final version^(20,21). Thus, the semantic equivalence and description of the terms were obtained, for a simple literal translation of the words may result in misinterpretation⁽²⁶⁾. Care was taken so that the instrument was understandable and would not generate any distortion or misconceptions⁽²²⁾.

Thus, the committee of specialists formed by Italian Speech-Language and Audiology Therapists, with experienced in orofacial myofunctional evaluation, appreciated and reported their concerns, criticisms, and suggestions to the instrument. Moreover, they suggested the description of certain methods in order to offer more information about the protocols to new users. It was a consensus among the members of the committee that the name of the instrument (OMES) should be kept in Portuguese, that is, AMIOFE.

In fact, the process of translation and transcultural adaptation promotes the enrichment of collaborative work among researchers of different places/contexts about a particular common problem⁽²⁸⁾. Currently, several studies include researchers and populations worldwide with the objective of investigating health problems.

Similarities in the total scores obtained by the OMES protocol in health Italian people and the ones obtained with previous samples indicate that our goals have been achieved. The mean total score obtained in our Italian subjects (90.53 ± 6.53) is very close to Brazilian adults (94.62 ± 4.07)⁽⁴⁾. Therefore, these preliminary values may be used as a reference for future studies

with young and adult Italian subjects. The significant statistical difference of the total score obtained between the groups with and without OMD reflects the validity of the construct of the OMES protocol into Italian, i.e., the ability to discriminate the subjects as for the presence of OMD^(3,29).

The validation study also required an estimated reliability, which may be defined as the extension by which the measure reflects the true result⁽²⁹⁾. In our study, the Italian version of the OMES protocol was reliable as for the inter and intraevaluator evaluations when compared.

Despite the apparent ease of use of the OMES protocol, it is essential that the examiner knows the anatomy and physiology of the stomatognathic system, the patterns of normality of the functions and the alterations and possible disorders⁽³⁾. In addition to that, before its applications, a standardized training for all professionals who will use the instrument should be carried out⁽¹³⁾. When the examiner is trained and the study conducted with controlled and appropriate methodology, the levels of correlation between the evaluations and their agreement increases without a doubt⁽¹³⁾.

This study consisted of the first stage of validation of the OMES protocol as a measurement instrument of the orofacial functions and behaviors in Italian subjects. Future studies are necessary in order to ensure the psychometric characteristics, with the sensitivity and the specificity, and the validity of the criteria and of the construct of the instrument have been kept^(3,14) and, moreover, to determine the inner consistency and normative values for the Italian population with a wider public. However, the new stages would not be possible without the stage presented in this study. The same procedures should be adopted for other scales and instruments in the Speech–Language and Audiology Therapy areas^(24,25).

The OMES protocol in Italian allows the examiner to numerically express their perception of the orofacial behavior and characteristics observed, and it may be administered without the use of special equipment in a brief way⁽⁴⁾, as in the other versions of the original protocol⁽¹³⁾. The instrument has clinical and research applications; therefore, it is potentially useful for Speech–Language Therapists who performed orofacial myofunctional evaluation.

CONCLUSION

The Italian version of the OMES protocol was translated and transculturally adapted. The total scores of the OMES protocol presented by the young and adult Italian individuals without OMD were close to the previously described in subjects with the same characteristics. The instrument was proven useful and reliable for the evaluation of the stomatognathic system of this population.

**CMF: Conception and design of the study, execution of the study, statistical analysis, interpretation of the results, review of the article, and approval of the version to be published; GAF: Design of the study, execution of the study, collection of the data, statistical analysis, interpretation of the results, writing of the manuscript, and approval of the version to be published; CLPF: Execution of the study, collection of the data, review of the article, and*

approval of the version to be published; LCP: Execution of the study, review of the article, and approval of the version to be published; CS: Execution of the study, review of the article, and approval of the version to be published.

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Appendix I. Protocol of the Orofacial Myofunctional Evaluation with Scores (Omes Protocol) (Versione Italiana per la Valutazione Miofunzionale Orofaciale)

This protocol may also be required by e-mail to the corresponding author (cfelicio@fmrp.usp.br)

Nome: _____ sesso: (F) (M)

Data di nascita ____/____/____ Et : _____ Patologia: _____

Indirizzo: _____

Logopedista: _____

Osservazioni: _____

Data ____/____/____

ASPETTO E POSTURA

Postura delle labbra		Punteggi
<i>Chiusura (sigillo) delle labbra normale</i>	<i>Soddisfano la funzione di chiudere la bocca e sono a contatto senza sforzo</i>	(3)
<i>Chiusura delle labbra con sforzo</i>	<i>Aumento dell'attivit� delle labbra e del muscolo Mentalis (mentoniero)</i>	(2)
<i>Labbra aperte (incompetenza labiale)</i>	<i>Disfunzione lieve</i>	(2)
	<i>Disfunzione severa (grave)</i>	(1)
Postura verticale della mandibola		Punteggi
<i>Postura normale</i>	<i>Con spazio libero interocclusale: i denti sono disclusi, non a contatto con gli antagonisti ("freeway space")</i>	(3)
<i>Occlusione dentale</i>	<i>Senza spazio libero interocclusale: i denti sono a contatto con gli antagonisti</i>	(2)
<i>Bocca aperta</i>	<i>Disfunzione lieve</i>	(2)
<i>Bocca molto aperta</i>	<i>Disfunzione severa</i>	(1)
Aspetto delle guance		Punteggi
<i>Normale</i>		(3)
<i>Ipertrofiche o Flaccide/cascanti</i>	<i>Disfunzione lieve</i>	(2)
	<i>Disfunzione severa</i>	(1)
Aspetto della faccia		Punteggi
<i>Simmetria tra i lati destro e sinistro</i>	<i>Normale</i>	(3)
<i>Asimmetria</i>	<i>Disfunzione lieve</i>	(2)
	<i>Disfunzione severa</i>	(1)
Postura della lingua		Punteggi
<i>Contenuta nella cavit� orale</i>	<i>Normale</i>	(3)
<i>Interposizione della lingua tra le arcate dentarie</i>	<i>Adattamento alla malocclusione o disfunzione</i>	(2)
	<i>Protrusione eccessiva</i>	(1)
Aspetto del palato		Punteggio
	<i>Normale</i>	(3)
<i>Ridotta ampiezza trasversale (Palato stretto)</i>	<i>Lieve</i>	(2)
	<i>Severa</i>	(1)
<i>Totale dei Punteggi per Aspetto e Postura (Somma)</i>		

MOBILIT 

(Disfunzioni o alterazioni sono considerate presenti quando si osservano: mancanza di precisione del movimento, tremore, e/ o movimenti congiunti (associati) di altre componenti (esempio: labbra che accompagnano i movimenti della lingua) e inabilit  (impossibilit ) nell'eseguire i movimenti richiesti.)

Esecuzione	MOVIMENTI DELLE LABBRA			
	Protrusione	Retrusione (sorriso chiuso)	Laterale a Destra	Laterale a Sinistra
<i>Precisa</i>	(3)	(3)	(3)	(3)
<i>Imprecisa</i>	(2)	(2)	(2)	(2)
<i>Severa inabilit�</i>	(1)	(1)	(1)	(1)
<i>Risultato (somma)</i>				

Esecuzione	MOVIMENTI DELLA LINGUA					
	Protrusione	Retrusione	Laterale a	Laterale a	Sollevare	Abbassare
			Destra	Sinistra		
<i>Precisa</i>	(3)	(3)	(3)	(3)	(3)	(3)
<i>Imprecisa</i>	(2)	(2)	(2)	(2)	(2)	(2)
<i>Severa inabilità</i>	(1)	(1)	(1)	(1)	(1)	(1)
<i>Risultato (somma)</i>						

Esecuzione	MOVIMENTI DELLA MANDIBOLA					
	Apertura	Chiusura	Laterale a Destra	Laterale a Sinistra	Protrusione	
<i>Precisa</i>	(3)	(3)	(3)	(3)	(3)	
<i>Imprecisa</i>	(2)	(2)	(2)	(2)	(2)	
<i>Severa inabilità</i>	(1)	(1)	(1)	(1)	(1)	
<i>Risultato (somma)</i>						

Esecuzione	MOVIMENTI DELLE GUANCE				
	Gonfiare	Succhiare	Ritirare	Trasferire aria da destra a sinistra	
			(sorriso chiuso)		
<i>Precisa</i>	(3)	(3)	(3)	(3)	
<i>Imprecisa</i>	(2)	(2)	(2)	(2)	
<i>Severa inabilità</i>	(1)	(1)	(1)	(1)	
<i>Risultato (somma)</i>					

Totale dei Punteggi per Mobilità (Somma)

FUNZIONI

Respirazione	Punteggi
<i>Respirazione nasale</i>	Normale (3)
<i>Respirazione oronasale</i>	Disfunzione lieve (2)
<i>Respirazione orale</i>	Disfunzione severa (1)
<i>Risultato</i>	

Deglutizione: Comportamento delle labbra	Punteggi
<i>Chiusura (sigillo) labiale normale</i>	Le Labbra sono a contatto senza sforzo (3)
<i>Chiusura labiale con sforzo</i>	Disfunzione lieve (2)
<i>Assenza di chiusura labiale</i>	Disfunzione moderata (1)
<i>Risultato</i>	Disfunzione severa (0)

Deglutizione: Comportamento della lingua	Punteggi
<i>Contenuta nella cavità orale</i>	Normale (3)
<i>Interposizione della lingua tra le arcate dentarie</i>	Adattamento o disfunzione (2)
<i>Risultato</i>	Protrusione eccessiva (1)

Deglutizione: Altri comportamenti e segni di disfunzione	Punteggi
<i>Movimenti della testa</i>	Assenti (1)
	Presenti (0)
<i>Tensione dei muscoli facciali</i>	Assenti (1)
	Presenti (0)
<i>Fuoriuscita del cibo dalle labbra</i>	Assenti (1)
	Presenti (0)
<i>Risultato (somma)</i>	

Elementi complementari – Efficienza della Deglutizione	Punteggi
<i>Bolo solido</i>	
<i>Deglutizione singola</i>	(3)
<i>Doppia deglutizione</i>	(2)
<i>Deglutizioni multiple</i>	(1)
<i>Bolo liquido</i>	
<i>Deglutizione singola</i>	(3)
<i>Doppia deglutizione</i>	(2)
<i>Deglutizioni multiple</i>	(1)
<i>Risultato (somma)</i>	

<i>Totale dei Punteggi per Deglutizione (Somma)</i>		
Masticazione – morso		Punteggi
<i>Morde con i denti incisivi e/o canini</i>	Normale	(3)
<i>Morde con i denti posteriori</i>	Disfunzione lieve	(2)
<i>Non morde</i>	Disfunzione severa	(1)
Masticazione		Punteggi
<i>Bilaterale</i>	<i>Alternata (40%-65% per ogni lato)</i>	(4)
	<i>Simultanea (verticale)</i>	(3)
<i>Unilaterale (mastica su un lato)</i>	<i>Preferenziale (66% sullo stesso lato)</i>	(2)
	<i>Cronica (95% sullo stesso lato)</i>	(1)
<i>Anteriore</i>	<i>Triturazione con gli incisivi</i>	(1)
<i>Non esegue la funzione</i>		(1)
<i>Risultato (somma)</i>		
Masticazione: Altri comportamenti e segni di disfunzione		Punteggi
<i>Movimenti della testa</i>	<i>Assenti</i>	(1)
	<i>Presenti</i>	(0)
<i>Postura alterata</i>	<i>Assenti</i>	(1)
	<i>Presenti</i>	(0)
<i>Fuoriuscita di cibo dalle labbra</i>	<i>Assenti</i>	(1)
	<i>Presenti</i>	(0)
<i>Risultato (somma)</i>		
<i>Totale dei Punteggi per Masticazione (Somma)</i>		

VALUTAZIONE DELL'OCCLUSIONE FUNZIONALE

Linea Mediana	Normale	Deviazione a destra	Misura (mm)	Deviazione a sinistra	Misura (mm)
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Classificazione di Angle

	Normale	II Classe	II Classe II	III Classe
Destra	I Classe	1a Divisione	2a Divisione	
Sinistra	I Classe	1a Divisione	2a Divisione	

Movimenti Mandibolari

	Movimenti				Misure (mm)	
	Normale	Deviazione	Dolore	Ovebite	Distanza massima tra denti incisivi inferiore e superiore	Totale
Apertura	D	S	D	S		
Chiusura	D	S	D	S		

D: destra; S: sinistra

Ovebite ovvero la distanza tra margine incisivo superiore e margine incisivo inferiore, sul piano sagittale.

Protrusione	Movimento				Interferenze Posteriori		Misure (mm)		
	Dolore		Deviazione		D	S	Overjet	Distanza	Totale
	D	S	D	S					

D: destra; S: sinistra

Overjet ovvero la distanza tra margine incisivo superiore e margine incisivo inferiore, sul piano orizzontale.

Rumori articolatori (Articolazione temporomandibolare) presente o assente	Apertura	Chiusura	Protrusione	Laterale a destra	Laterale a sinistra
Destra					
Sinistra					