

# MediaWiki:Lékařská kalkulačka/PD-MCI.js

**Note:** After publishing, you may have to bypass your browser's cache to see the changes.

- **Firefox / Safari:** Hold *Shift* while clicking *Reload*, or press either *Ctrl-F5* or *Ctrl-R* (*⌘-R* on a Mac)
- **Google Chrome:** Press *Ctrl-Shift-R* (*⌘-Shift-R* on a Mac)
- **Internet Explorer / Edge:** Hold *Ctrl* while clicking *Refresh*, or press *Ctrl-F5*
- **Opera:** Press *Ctrl-F5*.

```
1  /**
2  * ReplaceAll by Fagner Brack (MIT Licensed)
3  * Replaces all occurrences of a substring in a string
4  */
5  String.prototype.replaceAll = function(token, newToken, ignoreCase) {
6      var str, i = -1, token;
7      if((str = this.toString()) && typeof token === "string") {
8          token = ignoreCase === true? token.toLowerCase() : undefined;
9          while((i =
10             token !== undefined?
11                 str.toLowerCase().indexOf(
12                     token,
13                     i >= 0? i + newToken.length : 0
14                 ) : str.indexOf(
15                     token,
16                     i >= 0? i + newToken.length : 0
17                 )
18             ) !== -1 ) {
19                 str = str.substring(0, i)
20                     .concat(newToken)
21                     .concat(str.substring(i + token.length));
22             }
23         }
24     return str;
25 };
26
27 /***** Převod do html podoby *****/
28 var content = $( '#lekarska_kalkulacka_PDMCI-content' ).text();
29 $( '#lekarska_kalkulacka_PD-MCI' ).html( content.replaceAll('paragraph', 'p').replaceAll( 'resValue', 'span'
30 ).replaceAll('breakline', 'br' ).replaceAll('division', 'div').replaceAll('orderedlist', 'ol').replaceAll('header3', 'h3') );
31
32 /***** Pomocné funkce *****/
33 function z2percentile(z) {
34     //z == number of standard deviations from the mean
35     //if z is greater than 6.5 standard deviations from the mean
36     //the number of significant digits will be outside of a reasonable
37     //range
38     if ( z < -6.5)
39         return 0.0;
40     if( z > 6.5)
41         return 1.0;
42     var factK = 1;
43     var sum = 0;
44     var term = 1;
45     var k = 0;
46     var loopStop = Math.exp(-23);
47     while(Math.abs(term) > loopStop)
48     {
49         term = .3989422804 * Math.pow(-1,k) * Math.pow(z,k) / ( 2 * k + 1) / Math.pow(2,k) * Math.pow(z,k+1) / factK;
50         sum += term;
51         k++;
52         factK *= k;
53     }
54     sum += 0.5;
55     return 100 * sum;
56 }
57
58 function lekarska_kalkulacka_PDMCI_round( num ) {
59     return Math.round( num * 100 )/100;
60 }
61
62 //list of all exams:
63 var lekarska_kalkulacka_PDMCI_exams = ['tmta', 'dsb', 'tol', 'sf', 'waisrsim', 'bnt', 'ravltldr', 'bvmtldr', 'jol', 'cloxi' ];
64
65 function lekarska_kalkulacka_PDMCI_calculate() {
66     //constants for mean, age, gender, education and root-mean-squared-error.
67     var params = {
68         'tmta': {'mean': 26.9158786733743, 'age': 0.79620528727942, 'gender': 4.74634500135709, 'education': -2.39555789653284, 'rmse':
69 21.5263435503107, 'sign': -1},
70         'dsb': {'mean': 6.22505145210761, 'age': -0.0353867065943914, 'gender': 0.0504968458243749, 'education': 0.145660577638105,
71 'rmse': 1.73431460274184, 'sign': 1},
72         'tol': {'mean': 26.212, 'age': -0.02, 'gender': 0.876, 'education': 0.123, 'rmse': 4.0180142746561, 'sign': 1},
73         'sf': {'mean': 23.264086457321, 'age': -0.120157685039321, 'gender': -1.44318686698752, 'education': 0.50860013280954, 'rmse':
74 5.25757400801454, 'sign': 1},
75         'waisrsim': {'mean': 16.1402735987095, 'age': 0.0110148506822712, 'gender': 0.406095078769549, 'education': 0.405391790083139,
76 'rmse': 2.90446499325018, 'sign': 1},
77         'bnt': {'mean': 28.914, 'age': -0.03, 'gender': 0.528, 'education': 0.118, 'rmse': 2.0352323641588, 'sign': 1},
78         'ravltldr': {'mean': 10.0782355220185, 'age': -0.0596358856716573, 'gender': -1.18442668955274, 'education': 0.177938240926311,
79 'rmse': 3.13935122843155, 'sign': 1},
80         'bvmtldr': {'mean': -7.894, 'age': 0.224, 'gender': -0.49, 'education': -0.081, 'rmse': 1.37805118389885, 'sign': 1},
81         'jol': {'mean': 21.265817188006, 'age': -0.00668162115988829, 'gender': 1.59561981002336, 'education': 0.298311430076549, 'rmse':
82 2.70879202666548, 'sign': 1},
83         'cloxi': {'mean': 14.0595765238921, 'age': -0.00607962563105891, 'gender': -0.125831401116365, 'education': 0.0256924652224113,
84 'rmse': 1.09114056301701, 'sign': 1}
85     }
86     var results = { 'very_superior': [], 'superior': [], 'high_average': [], 'average': [], 'low_average': [], 'midly_impaired': [],
87 'moderately_impaired': [], 'severely_impaired': []};
88     var fullnames = { 'tmta': 'TMT-A', 'dsb': 'DS backwards', 'tol': 'ToL', 'sf': 'Semantic fluency', 'waisrsim': 'WAIS-R
89 Similarities', 'bnt': 'BNT-30', 'ravltldr': 'RAVLT-DR', 'bvmtldr': 'BVM-DR', 'jol': 'JoL', 'cloxi': 'CLOX I' };
```

```

81
82 for (var i = 0; i < lekarska_kalkulacka_PDMCI_exams.length; i++) {
83     var exam = lekarska_kalkulacka_PDMCI_exams[i];
84     var value = $('#lekarska_kalkulacka_PDMCI-' + exam + '-number').val();
85     var gender = $('#input[name=gender]:checked', '#lekarska_kalkulacka_PDMCI-gender').val();
86     var age = $('#lekarska_kalkulacka_PDMCI-age-number').val();
87     var education = $('#lekarska_kalkulacka_PDMCI-education-number').val();
88     var mean = params[exam]['mean'];
89     var age_factor = params[exam]['age'];
90     var gender_factor = params[exam]['gender'];
91     var education_factor = params[exam]['education'];
92     var sign = params[exam]['sign'];
93     var rmse = params[exam]['rmse'];
94     var zscore = sign * ((value - (mean + age * age_factor + gender * gender_factor + education * education_factor))/rmse);
95     var perc = z2percentile( zscore );
96     $( '#lekarska_kalkulacka_PDMCI-' + exam + '-Z' ).val( lekarska_kalkulacka_PDMCI_round(zscore) );
97     $( '#lekarska_kalkulacka_PDMCI-' + exam + '-perc' ).val( lekarska_kalkulacka_PDMCI_round(perc) );
98
99     if ( zscore < -2.5 ) $( '#lekarska_kalkulacka_PDMCI-' + exam + '-SD' ).html( '-2.5 SD' );
100    else if ( zscore < -2 ) $( '#lekarska_kalkulacka_PDMCI-' + exam + '-SD' ).html( '-2 SD' );
101    else if ( zscore < -1.5 ) $( '#lekarska_kalkulacka_PDMCI-' + exam + '-SD' ).html( '-1.5 SD' );
102    else if ( zscore < -1 ) $( '#lekarska_kalkulacka_PDMCI-' + exam + '-SD' ).html( '-1 SD' );
103    else $( '#lekarska_kalkulacka_PDMCI-' + exam + '-SD' ).html( '' );
104
105    if (perc >= 98 ) {
106        results['very_superior'].push( fullnames[ exam ] );
107    } else if ( perc >= 91 ) {
108        results['superior'].push( fullnames[ exam ] );
109    } else if ( perc >= 75 ) {
110        results['high_average'].push( fullnames[ exam ] );
111    } else if ( perc >= 25 ) {
112        results['average'].push( fullnames[ exam ] );
113    } else if ( perc >= 9 ) {
114        results['low_average'].push( fullnames[ exam ] );
115    } else if ( perc >= 2 ) {
116        results['midly_impaired'].push( fullnames[ exam ] );
117    } else if ( perc >= 1 ) {
118        results['moderately_impaired'].push( fullnames[ exam ] );
119    } else {
120        results['severely_impaired'].push( fullnames[ exam ] );
121    }
122 }
123
124 var resulthtml = '';
125 if (results['very_superior'].length > 0) resulthtml += '<p><b>Very superior:</b>' + results['very_superior'].join() + '</p>';
126 if (results['superior'].length > 0) resulthtml += '<p><b>Superior:</b>' + results['superior'].join() + '</p>';
127 if (results['high_average'].length > 0) resulthtml += '<p><b>High average:</b>' + results['high_average'].join() + '</p>';
128 if (results['average'].length > 0) resulthtml += '<p><b>Average:</b>' + results['average'].join() + '</p>';
129 if (results['low_average'].length > 0) resulthtml += '<p><b>Low average:</b>' + results['low_average'].join() + '</p>';
130 if (results['midly_impaired'].length > 0) resulthtml += '<p><b>Midly impaired:</b>' + results['midly_impaired'].join() + '</p>';
131 if (results['moderately_impaired'].length > 0) resulthtml += '<p><b>Moderately impaired:</b>' +
132 results['moderately_impaired'].join() + '</p>';
133 if (results['severely_impaired'].length > 0) resulthtml += '<p><b>Severely impaired:</b>' + results['severely_impaired'].join() +
134 '</p>';
135 $( '#lekarska_kalkulacka_PDMCI-vysledek' ).html(resulthtml);
136 }
137
138 function lekarska_kalkulacka_PDMCI_set( name, value ) {
139     $('#lekarska_kalkulacka_PDMCI-' + name + '-range').val(value);
140     $('#lekarska_kalkulacka_PDMCI-' + name + '-number').val(value);
141 }
142
143 //***** Vlastní výpočet *****/
144 //list of all ids ('-range' and '-number' for each)
145 var lekarska_kalkulacka_PDMCI_ids = [
146     'lekarska_kalkulacka_PDMCI-tmta-range',
147     'lekarska_kalkulacka_PDMCI-tmta-number',
148     'lekarska_kalkulacka_PDMCI-dsb-range',
149     'lekarska_kalkulacka_PDMCI-dsb-number',
150     'lekarska_kalkulacka_PDMCI-tol-range',
151     'lekarska_kalkulacka_PDMCI-tol-number',
152     'lekarska_kalkulacka_PDMCI-sf-range',
153     'lekarska_kalkulacka_PDMCI-sf-number',
154     'lekarska_kalkulacka_PDMCI-waisrsim-range',
155     'lekarska_kalkulacka_PDMCI-waisrsim-number',
156     'lekarska_kalkulacka_PDMCI-bnt-range',
157     'lekarska_kalkulacka_PDMCI-bnt-number',
158     'lekarska_kalkulacka_PDMCI-ravltr-range',
159     'lekarska_kalkulacka_PDMCI-ravltr-number',
160     'lekarska_kalkulacka_PDMCI-bvmttr-range',
161     'lekarska_kalkulacka_PDMCI-bvmttr-number',
162     'lekarska_kalkulacka_PDMCI-jol-range',
163     'lekarska_kalkulacka_PDMCI-jol-number',
164     'lekarska_kalkulacka_PDMCI-cloxi-range',
165     'lekarska_kalkulacka_PDMCI-cloxi-number',
166     'lekarska_kalkulacka_PDMCI-age-range',
167     'lekarska_kalkulacka_PDMCI-age-number',
168     'lekarska_kalkulacka_PDMCI-education-range',
169     'lekarska_kalkulacka_PDMCI-education-number'
170 ];
171
172 var lekarska_kalkulacka_PDMCI_id2name = {
173     'lekarska_kalkulacka_PDMCI-tmta-range': 'tmta',
174     'lekarska_kalkulacka_PDMCI-tmta-number': 'tmta',
175     'lekarska_kalkulacka_PDMCI-dsb-range': 'dsb',
176     'lekarska_kalkulacka_PDMCI-dsb-number': 'dsb',
177     'lekarska_kalkulacka_PDMCI-tol-range': 'tol',
178     'lekarska_kalkulacka_PDMCI-tol-number': 'tol',
179     'lekarska_kalkulacka_PDMCI-sf-range': 'sf',
180     'lekarska_kalkulacka_PDMCI-sf-number': 'sf',
181     'lekarska_kalkulacka_PDMCI-waisrsim-range': 'waisrsim',
182     'lekarska_kalkulacka_PDMCI-waisrsim-number': 'waisrsim',
183     'lekarska_kalkulacka_PDMCI-bnt-range': 'bnt',
184     'lekarska_kalkulacka_PDMCI-bnt-number': 'bnt',
185     'lekarska_kalkulacka_PDMCI-ravltr-range': 'ravltr',
186     'lekarska_kalkulacka_PDMCI-ravltr-number': 'ravltr',
187     'lekarska_kalkulacka_PDMCI-bvmttr-range': 'bvmttr',
188     'lekarska_kalkulacka_PDMCI-bvmttr-number': 'bvmttr',
189     'lekarska_kalkulacka_PDMCI-jol-range': 'jol',
190     'lekarska_kalkulacka_PDMCI-jol-number': 'jol',
191     'lekarska_kalkulacka_PDMCI-cloxi-range': 'cloxi',

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188     'lekarska_kalkulacka_PDMCI-cloxi-number': 'cloxi',
189     'lekarska_kalkulacka_PDMCI-age-range': 'age',
190     'lekarska_kalkulacka_PDMCI-age-number': 'age',
191     'lekarska_kalkulacka_PDMCI-education-range': 'education',
192     'lekarska_kalkulacka_PDMCI-education-number': 'education'
193 };
194
195 $( 'input' ).change( function() {
196     //if an input that corresponds to an exam is changed, then run the calculation
197     if ( $.inArray( $(this).attr('id'), lekarska_kalkulacka_PDMCI_ids ) ) {
198         //1st argument is name of the input (mapped from id), 2nd argument is its value.
199         lekarska_kalkulacka_PDMCI_set( lekarska_kalkulacka_PDMCI_id2name[$(this).attr('id')], $(this).val() );
200     }
201     $('#lekarska_kalkulacka_PDMCI-tmta-number').val($('#lekarska_kalkulacka_PDMCI-tmta-range').val());
202     lekarska_kalkulacka_PDMCI_calculate();
203 });
204
205 /*
206 $( 'input' ).change( function() {
207     var result = 'result';
208     $( '#lekarska_kalkulacka_PDMCI-vysledek' ).html( result );
209 });
210 */
```