Curriculum Vitae

Name: Patrícia Martinková

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Educational Background:
2003 – 2007   Ph.D. in Probability and Mathematical Statistics,
Charles University in Prague, Czech Republic
1998 – 2003   MSc. in Probability, Mathematical Statistics and Econometry,
Charles University in Prague, Czech Republic

Academic positions:
Since 2008   *Researcher* at Institute of Computer Science, AS CR,
Since 2016   *Affiliate Assistant Professor*, Dept. of Statistics, University of Washington
2013 – 2015   *Visiting research scholar* at Dept. of Statistics and Center for Statistics and
Social Studies, University of Washington, USA
2007 – 2008   *Junior Scientist* at Center for Biomedical Informatics, AS CR
2001 – 2006   *Research Assistant* at Institute of Computer Science, AS CR

Awards and Grants:
2015 – 2017   Czech Science Foundation (PI)
2013 – 2014   Fulbright-Masaryk Fellowship
Feb 2014   Outreach Lecturing Fund (OLF) Award, CIES
July 2013   Best Poster Award (Psychometric Society, IMPS 2013, Arnhem, NL)
May 2013   Travel Award (Czech Statistical Society)
May 2011   Otto Wichterle Award (Academy of Sciences of the Czech Republic)

Memberships:
Czech Statistical Society
Psychometric Society
International Society for Clinical Biostatistics

Supervised Students:
Doctoral students, Dept. of Probability and Statistics, Charles University, Czech Republic:
- Adéla Drabinová: Statistical Models in Psychometrics (expected 2019)

Master students, Dept. of Probability and Statistics, Charles University, Czech Republic:
- Katarína Vlčková: Test and Item Fairness (2015)
- Dominik Tělupil: Computerized Adaptive Testing (expected 2018)

Selected Research Projects:

2015 – 17   **Estimation of psychometric measures as part of admission test development**
Junior researcher project funded by Czech Science Foundation. Project explores statistical and psychometric tools for analysis and improvement of admission process. (Principal Investigator)

2013 – 15   **Applicants at the Doorstep**
IES project of Center of Education and Data Research. Analysis of relationship between measures of teacher applicants and subsequent teacher performance in Spokane Public Schools. Estimation of intra-rater and inter-rater reliability of ratings of the applicants and its impact on their predictive power.

2014 – 15   **Defining and Assessing Core Principles for Undergraduate Physiology**
NSF project of Edmonds Community College. Analysis of properties of newly designed homeostasis inventory and its items across different groups of undergraduate students.

Since
2003   **Reliability of measurements**
Research on reliability estimates in various models (IRT models, multilevel models, etc). Simulations on behavior of various estimates, including newly proposed estimate logistic alpha.

Since
2006   **Analysis of admission tests to Charles University, Prague**
Analyses of admission data and study outcomes at Charles University in Prague. Automation of IRT analysis and item calibration using free statistical software R.

Since
2010   **European Survey on Physiotherapy in MS**
Design and statistical analyses of complex questionnaire on organization of physical rehabilitation in multiple sclerosis in Europe.

2007 – 10   **Psychometric properties of clinical tests used in MS**
Analysis of set of clinical measurements in multiple sclerosis patients.

Teaching:
Winter 2015   EDPSY 595 **Item Response Theory.** University of Washington.
Spring 2015   STAT/CS&SS/SOC 221 **Statistical Concepts and Methods for the Social Sciences.** University of Washington.
2002 – 2013   **Statistics in Medical Research.** EuroMISE Centre, Czech Republic.
2004   **Statistics for the Social Sciences.** University of J. E. Purkyne, Czech Republic
2004   **Biostatistics.** TA, School of Natural Sciences, Charles University in Prague.

Guest lectures:
2013   **Seminar in longitudinal data analysis.** University of Washington.
R lab on longitudinal data analysis.
2014   **Introduction to R for Social Scientists.** University of Washington.
R lab on sampling and probability distribution calculations.

Submitted papers and papers in progress:

- with Goldhaber D. and Erosheva E. Mixed Effect Models for Assessing Interrater Reliability and Its Moderators in Complex Settings As It Applies to Selection Instruments, prepared for resubmission

- with Drabinova A. Detection of Differential Item Functioning with Non-Linear Regression: Non-IRT Approach Accounting for Guessing, under review *Journal of Educational Measurement*

- with Drabinova A, Liaw Y-L, Sanders EA, McFarland J, Wenderoth MP and Price RM. Using DIF Analysis to Reveal Potential Equity Gaps in Conceptual Assessments, prepared for resubmission in *CBE - Lifesciences*)

- with Michael J, McFarland J et al. Validating a conceptual framework for the core concept of "cell-cell communications", prepared for resubmission in *Advances in Physiology*)

- with McFarland J and Wenderoth MP. Concept Inventory for Homeostasis in Undergradute Education, in review for *CBE - Lifesciences*

- with Rasova K et al. Content of physical therapy in multiple sclerosis across Europe: questionnaire survey, in preparation

Selected publications:

Řasová K, Freeman J, **Martinková P**. et al. The Organisation of Physical Therapy for People with Multiple Sclerosis across Europe: A Multicentre Questionnaire Survey. *BMC Health Serv Res, 2016, 16(1).*

Martinková P, Goldhaber D. Improving Teacher Selection: The Effect of Inter-Rater Reliability in the Screening Process. *CEDR working paper 2015-7.* University of Washington.

Řasová K, **Martinková P**, et al. Physical therapy provision in multiple sclerosis across Europe: a regional lottery? *European Journal of Physical and Rehabilitation Medicine,* 2015, 51(6), pp. 850-852.

Martinková P, Vlčková K. Estimation of reliability of educational and psychological measurements. [In Czech] *Bulletin of Czech Statistical Society,* 25(4), pp. 1-15, 2014.

Řasová K, **Martinková P**, et al. Physical therapy in multiple sclerosis differs across Europe – Information regarding an ongoing study. *The Journal of International Medical Research,* 42(5), pp. 1185-87, 2014.

Štuka Č, **Martinková P**, Vejražka M, Trnka J, Komenda M. *Student Assessment in Medical Education: Construction and Analysis of Tests at Medical Schools.* [Book in Czech, 156 p.] Praha: Karolinum, 2013.

Řasová K, **Martinková P**, Vyskotová J, Šedová M. Assessment set for evaluation of clinical outcomes in multiple sclerosis - psychometric properties. *Patient Related Outcome Measures*, 3, pp. 59-70, 2012.

Štuka Č, **Martinková P**, Zvára K, Zvárová J. The prediction and probability for successful completion in medical study based on admission test and pre-admission grades. *The New Educational Review,* 28(2), pp. 138-152, 2012.

Řasová K, Kalistová H, Kučera P, Juzová O, Zimová D, Medová E, Doležil D, Jandová D, Tintěra J, Ibrahim I, Zvára K, Bičíková M, **Martinková P.** Physiotherapy as an immunoactive therapy? A pilot study. *Neuroendocrinology Letters*, 33(1), pp. 67-75, 2012.

Ibrahim I, Tintěra J, Škoch A, Jírů F, Hluštík P, **Martinková P**, Zvára K, Řasová K. Fractional anisotropy and mean diffusivity in the corpus callosum of patients with multiple sclerosis: the effect of physiotherapy. *Neuroradiology*, 53(11), pp. 917-26, 2011.

Martinková P, Zvára K. Reliability of Composite Dichotomous Measurements. *European Journal for Biomedical Informatics*, 6(2), pp. 14-23, 2010.

Řasová K, Brandejský P, Tintěra J, Krásenský J, Zimová D, Medová E, Herbenová A, Kalistová H, Jech R, Řasová M, Zemanová P, Zeman J, Ibrahim I, **Martinková P**, Doležil D, Jandová D. Bimanual Tandem Motor Task with Multiple Sclerosis in Functional Magnetic Resonance Imaging: Effect of Physiotherapeutic Techniques - a Pilot Study. *Česká a Slovenská neurologie a neurochirurgie,* 72(4), pp. 350-358, 2009.

Martinková P, Zvára K. Reliability in the Rasch Model. *Kybernetika*, 43(3), pp. 315-26, 2007.

Martinková P, Zvára jr. K, Zvárová J, Zvára K. The New Features of the Exame Evaluation System and Reliability of Its Fixed Tests. *Methods of Information in Medicine*, 45(2), pp. 310-315, 2006.

Řasová K, Havrdová E, Brandejský P, Zálišová M, Foubíková B, **Martinková P.** Comparison of the Influence of Different Rehabilitation Programmes on Clinical, Spirometric and Spiroergometric Parameters in Patients with Multiple Sclerosis. *Multiple Sclerosis*, 12(2), pp. 227-234, 2006.

Řasová K, Krásenský J, Havrdová E, Obenberger J, Seidel Z, Doležal O, **Rexová P**, Zálišová M. Is it Possible to Actively and Purposely make use of Plasticity and Adaptibility in the Neurorehabilitation Treatment of Multiple Sclerosis Patients? A Pilot Project. *Clinical Rehabilitation*, 19(2), pp. 170-181, 2005.

Vášková M, Mejstříková E, Kalina T, **Martinková P**, Omelka M, Trka J, Starý J, Hrušák O. Transfer of Genomics Information to Flow Cytometry: Expression of CD27 and CD44 Discriminates Subtypes of Acute Lymphoblastic Leukemia. *Leukemia*, 19(5), pp. 876-878, 2005.

Software:

Martinková P, Drabinová A, Leder O, Houdek J. ShinyItemAnalysis: Test and Item Analysis via Shiny. R package Version 1.0.0. CRAN, 2016.
Online version: https://shiny.cs.cas.cz/ShinyItemAnalysis/

Drabinová A, **Martinková P**, Zvára K. difNLR: Detection of Dichotomous Differential Item Functioning (DIF) by Non-Linear Regression Function. R package Version 0.2.0. CRAN, 2016.

Selected presentations:

Martinková P., Goldhaber D. Hierarchical Models for Assessing Reliability in Teacher Hiring. JSM, Seattle, Aug 2015.

Martinková P., Goldhaber D. Improving Teacher Selection: Effect of Inter-rater and Intra-rater Reliability in Screening Process. AEFP, Washington D.C., Feb 2015.

Martinková P. Researching Reliability Estimates in the Context of Czech Admission Tests. Presented as part of OLF travel award at BEAR seminar, UC Berkeley (host Karen Draney), CRESST UCLA (host Li Cai), UC Merced (host William Shadish), Feb 2014.

Martinková P, Turčičová M. Generalized Reliability Used for the Comparison of Reliability Estimates in Tests with Binary Items. Presented at IMPS 2013, Arnhem, Netherlands. Best poster award.

Řasová K, **Martinková P,** Henze, T. Towards an Inventory of the Content of Physical Rehabilitation in Europe. *Lifelong Perspective: Rehabilitation for MS Patients with Complex Needs,* University of Turku, pp. 24, 2011. Presented at RIMS 2011, Turku, Finland.

Martinková P, Šedová M, Řasová K. Reliability of clinical functioning measures in patients with multiple sclerosis. *30th Annual Conference of the International Society for Clinical Biostatistics*, pp. 147, 2009. Presented at ISCB 2009, Praha, Czech Republic.

Martinková P, Zvára K. Reliability of Composite Dichotomous Measurements. *29th Annual Conference of the International Society for Clinical Biostatistics*, pp. 93, 2008. Presented at ISCB 2008, Copenhagen, Denmark.

Šedová M, **Martinková P**, Gabalec L. Assessment and comparison of two questionnaires of quality of life in Crohn's disease patients. *Lifestat 2008. Statistics and Life Sciences: Perspective and Challenges*, pp.224. Presented at Lifestat, 2008, Munich, Germany.